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THE ADDRESS IN SURGERY.

THE PRESENT STATUS OF ABDOMINAL SURGERY.

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THE frequency with which grave complications followed even the most trivial operations before the introduction of the modern treatment of wounds, undoubtedly induced the great Hunter to remark, "The necessity for operation is in truth the defect of surgery." To-day, with an improved technique and the means at our disposal which, if properly applied, will furnish almost absolute protection against wound-infective diseases, the surgeon can, with a just source of pride and gratification, confirm the correctness of the assertion made centuries ago by Celsus, "quæ manu potissimun curat."

No one who is familiar with the medical literature of the last two decades can arrive at any other sentiment than that the legitimate sphere of the physician has been gradually growing smaller, or, if this statement is objected to, that the practice of medicine has become more and more surgical. In accordance with the spirit of the times, uncertainty and doubt in the diagnosis and treatment of disease must give way to positive knowledge and actual demonstration. Surgery has gained the supremacy over medicine because the principles upon which modern surgery rests have been made the subject of accurate investigation and positive demonstration in chemical, physiological, and pathological laboratories. The science of surgery is rapidly assuming a degree of accuracy approaching in perfection any of the exact sciences. During the last few years surgery has assumed a decidedly progressive and aggressive character. Operations which a few years ago would have been deemed impossible or unjustifiable, have become established, legitimate surgical procedures. In obscure, doubtful cases the scalpel is now frequently resorted to without fear of causing additional complications for the purpose of making *intra vitam* an anatomical diagnosis. Modern surgery has achieved its greatest triumphs in enlarging the field for the direct local treatment of disease, thus enabling the surgeon to treat with success injuries and lesions beyond the reach of medicinal agents. The surgical literature of the day bears abundant evidence that the remotest organs are now approached by the surgeon with comparative immunity, and that incalculable benefit has been derived from direct operative treatment. The affections of abdominal organs have received the well-merited attention of surgeons since the improved wound treatment has been introduced. Numerous maladies which heretofore have been considered ncurable are now successfully treated by the surgeon by operative measures. Experimental research and clinical experience have demonstrated that organs and parts of organs which were heretofore regarded as indispensable and essential can be successfully extirpated when they are the seat of injury or disease. With a view of directing your attention to a few of the most brilliant achievements of modern surgery, I have selected as the subject of my address, "The present status of abdominal surgery"—a condensed, brief account of the more recent advances made in the surgical treatment of injuries and diseases of the abdominal organs must interest equally the physician and surgeon.

It is not my intention to trespass upon the legitimate field occupied by the ovariotomist or the gynecologist. I shall, therefore, limit my remarks to a consideration of such injuries and lesions of the abdominal organs as present themselves to the physician and general surgeon. It will be my special aim to point out the limitation of abdominal operations and to draw a distinct line between the feasibility and justifiability of such operations.

PENETRATING WOUNDS OF THE ABDOMEN.

During the last year the literature on this subject has been enriched by two valuable papers by Drs. Dennis (THE MEDICAL NEWS, February 27, and March 6, 1886) and Bryant, of New York. These contributions, made in such rapid succession, may be considered as sufficient evidence of the deep interest which has been awakened among American surgeons on this practical and important subject. Dennis has well said, "It is a source of national pride that laparotomy in penetrating wounds and visceral injuries of the abdomen was conceived, developed, and perfected in America."

The propriety of resorting to abdominal section in every case of penetrating wound of the abdomen is urged by many, but it cannot be said that this practice is sanctioned by the majority of the profession at the present time. The great difficulty that presents itself to the surgeon, in the absence of positive symptoms, is to differentiate between a penetrating and a visceral wound.

Clinical experience and statistics have demonstrated the importance of making a distinction between punctured wounds and gunshot wounds of the abdomen in reference to diagnosis and treatment. It is well known that penetrating stab wounds are less likely to be complicated by visceral injury than bullet wounds, consequently this class of injuries offers a more favorable prognosis and does not call so uniformly for treatment by abdominal section. As in stab wounds there is a greater tendency to prolapse of the intestine, exploratory laparotomy for diagnostic purposes is also less frequently called for. The numberless recoveries after stab wounds of the abdomen, without resorting to heroic treatment, must induce every thoughtful surgeon to abstain from subjecting the patient to the additional risks of laparotomy unless the symptoms are such that the existence of visceral injury can be assumed with a reasonable de-

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gree of certainty. It must, however, be remembered, in arriving at conclusions concerning the nature of the injury, that the symptoms do not always correspond to the gravity of the visceral lesion; hence, if any doubt remains in the mind of the surgeon, it is justifiable and proper, now that exploratory laparotomy can be made with such comparative immunity, to resort to it and give the patient the only chance of recovery, ascertaining the exact nature of the injury, which can be the only proper and safe guide to rational and successful surgical treatment. Dr. Dennis has called special attention to volvulus as another complication of stab wounds of the abdomen, a condition which, when present, would in itself always indicate an abdominal section for its relief. In doubtful cases exploratory laparotomy can be done by enlarging the wound, which can be followed by the usual incision in the median line when operative treatment of the visceral lesion is required.

In gunshot wounds of the abdomen, the course of treatment to be pursued is more definitely settled by accumulated knowledge, resulting from careful experimental research and an immense clinical material. These injuries are so uniformly fatal that the slightest suspicion of injury of the intestine calls for treatment by laparotomy, as affording the only chance of recovery for the patient. The statement by Otis, that gunshot injuries of the small intestine are always fatal if treated upon conservative principles, is practically well established and is a sufficient argument in favor of treatment by abdominal section. In penetrating gunshot wounds it is highly probable that visceral injury exists, and this fact constitutes a potent argument in favor of surgical interference, which alone is adequate to prevent an inevitable fatal termination. The brilliant results which have been obtained by Bull, Hamilton, and others in desperate cases of multiple perforations of intestine by operative treatment, afford abundant encouragement for imitation of their practice.

It can be justly said that the surgeon who allows a patient to die from the effect of a visceral injury of the abdomen, produced by a stab wound or a bullet wound, without at least a proposition to resort to abdominal section, has failed to discharge the duties imposed by the teachings of modern surgery. Difficulties may be encountered by the medico-legal bearing of a case, but when called upon to treat an otherwise fatal injury, this should not deter the surgeon from resorting to the only measure which may save a human life. The first indication that presents itself in the treatment of an open wound of the peritoneal cavity, is to prevent in ection by covering the wound with an antiseptic compress, until ample preparations can be made for more effective treatment. Whenever practicable, the necessary dressing or operation should be done with the least possible delay, and at or as near as possible the place where the injury was inflicted. Procrastination and transportation are dangerous factors in the treatment of this class of injuries, as both augment the gravity of the case by increasing the danger arising from the two most dangerous conditions—hemorrhage and fecal extravasation.

The preparation for an abdominal section should be made with the same care as in opening the abdomen for the removal of an ovarian tumor. If the operation has to be performed we can never rely on an aseptic atmosphere, hence the minutest details of antiseptic surgery must be followed. The wound, and especially the prolapsed viscera, must be kept protected as much as possible against the air by avoiding unnecessary exposure. As a disinfectant solution, corrosive sublimate should be preferred to carbolic acid. The temperature of the room should be kept at 80° to 90° F. Until the abdominal cavity is opened, the field of operation must be frequently irrigated. The intestine when brought out of the wound, should be carefully protected with a warm aseptic compress, kept moist with a weak solution of corrosive sublimate, with a view to prevent abstraction of heat and to guard against infection.

The abdominal section has for its object: 1. Positive diagnosis; 2. Arrest of hemorrhage; 3. Restoration of a breach of continuity; 4. Removal of extravasation. Exploration of a penetrating wound either with the finger or a probe is never justifiable, as it increases the danger from extravasation and hemorrhage without furnishing any information of a diagnostic value. The direction of the wound canal and the anatomical location of the different viscera must be carefully considered before resorting to operative measures.

When it becomes necessary to make an exploratory incision of sufficient size to enable the operator to introduce his hand, it is preferable to select the median line, as an incision at this point inflicts less additional traumatism, is attended by little or no hemorrhage, and can be utilized at once for the necessary operative treatment of the visceral lesions, if they exist. It is a source of comfort to the surgeon to know that the different operators experienced but little difficulty in detecting the seat of lesion in the bowel, and that usually all the perforations were found in multiple wounds of the intestine. It is unnecessary to urge upon you the importance of a careful search for additional injury when one perforation is found, as a failure to detect all of the openings in the intestine would frustrate the object for which the patient was subjected to such a grave procedure.

Great stress has been placed upon the importance of carefully arresting all hemorrhage. From the peculiar anatomical relations of the bloodvessels in the abdominal cavity, it has been found that even very small vessels will continue to bleed unless permanent hæmostatic measures are employed. If many bleeding points are encountered, a number of hæmostatic forceps can be applied before tying the vessels. If any of the large venous trunks have been injured, peripheral compression will facilitate the difficult task of securing the bleeding vessel. If the wound in the bowel can be approximated without producing too much narrowing of its lumen, it should be closed with a Lembert or a Czerny-Lembert suture.

If enterectomy becomes necessary, the two ends of the bowel should always be united with a Czerny-Lembert suture, as this suture secures accurate approximation of an extensive serous surface, and thus furnishes the most favorable condition for rapid union, which affords the best possible protection against the danger of subsequent extravasation. If fecal extravasation has taken place, it becomes necessary to resort to a careful toilet of the peritoneum, which can be accomplished most efficiently with large, flat sponges wrung out of a weak solution of sublimate.

When extensive soiling of the peritoneal cavity has taken place, it would appear most expedient to resort to thorough irrigation with warm sterilized water, with a view of effecting mechanical removal of all foreign substances. When this has been accomplished, the peritoneal cavity should be further cleaned and dried with a sponge wrung out of a $\frac{1}{20}$ per cent. solution of corrosive sublimate.

The abdominal incision is closed in the same manner as after abdominal section for other purposes, in all cases where we have reasonable cause to believe that we have succeeded in securing an aseptic condition of the peritoneal cavity; if any doubt remains upon this point, drainage is indicated. The subsequent treatment must be conducted on general principles, rest, absolute diet, and the administration of opium, being the most essential conditions in favoring rapid healing of the intestinal wound. In the future, shock will not be mentioned as frequently as heretofore as a cause of death in penetrating wounds of the abdomen, as it has only too frequently been mistaken for the symptoms due to acute anæmia from hemorrhage into the peritoneal cavity. Further, when life is threatened from this cause, a fatal termination can often be prevented by resorting promptly to transfusion of blood, or intravenous injection of saline solution, after the bleeding points have been secured. I am satisfied that no modern surgeon would hesitate to endorse the treatment of wounds of the intestines by abdominal section: the opposition to the operation can only be entertained in cases in which it is impossible, without an exploratory incision, to differentiate between a penetrating wound and a visceral wound. It is to be regretted that in perforating wounds of the intestine symptom are often deceptive, and cannot always be relied upon as an unerring guide in diagnosis. Grave symptoms may be almost entirely absent, and yet many perforations exist, while in other instances severe symptoms may enable us to make a differential diagnosis by the simple interpretation of these symptoms. We must insist upon the justifiability of exploratory laparotomy for diagnostic purposes in all doubtful cases, and upon the importance of treating all open visceral wounds of the intestines by abdominal section as affording the only chance of preventing an otherwise almost certain fatal termination.

LAPAROCOLOTOMY.

In cases of rectal cancer not amenable to extirpation, Madelung advises that the colon should be divided completely across low down, and the peripheral end should be permanently closed by inverting the margins deeply, and applying two rows of sutures. A preternatural anus is established by stitching the proximal end to the margins of the wound in the same manner as in forming an intestinal fistula in any other locality. The advantages of this operation over the ordinary method are twofold: 1, the diseased bowel is protected from contact with the intestinal contents; 2, no fecal accumulation takes place below the artificial opening, as is so often the case after the ordinary methods of colotomy. Pollailon and Letiévant advise the same operation.

SUBCUTANEOUS LACERATION OF INTESTINE.

One of the darkest chapters in abdominal surgery pertains to subcutaneous traumatic rupture of the intestine. That this accident occurs more frequently than has been generally supposed, is well proved by recent investigations, and as the majority of cases have been undetected during life, it is proper and important to consider the propriety of abdominal section in all cases in which we have reason to suspect its existence.

Muguier has called attention to the fact that in some instances the laceration may be incomplete and give rise to no serious symptoms for days or weeks until perforation takes place. A contusion of the abdomen is received, and the patient and surgeon are in the belief that no serious injury has been sustained until symptoms indicative of perforation and fecal extravasation announce the gravity of the primary lesion. He reports three cases of this kind which came under his own observation, only one of which terminated favorably, and in this case the perforation produced a suppurative perityphlitis. He cites four additional cases, of which two terminated in recovery after the formation of a fecal abscess. These cases should at least put us upon our guard to exercise proper care in the treatment of abdominal contusions, so as to prevent if possible the disastrous consequences incident to perforation. Regulation of diet, rest, and the use of opiates may do a great deal in the restoration of a partial loss of continuity of the injured bowel.

Chavasse observed two cases of laceration of the intestine from contusion of the abdomen, which induced him to compile all cases of rupture of the intestine due to the same cause. He found a record of 149 such cases. A careful study of this material led him to the conclusion that in almost every case laceration or crushing of the intestine takes place at a point between the place where the external violence is applied, and the unyielding resistance offered by the posterior abdominal wall. Of these cases only six recovered, while the remaining number usually died within twenty-four hours, with symptoms of perforative peritonitis. He is in favor of treatment by abdominal section with a view of suturing the torn intestine, or making an artificial anus.

Berger insists that laparotomy should be performed in all cases where a diagnosis of intestinal rupture can be made. In the differential diagnosis injury to the kidney becomes apparent from the character of the urine. Injury to the gall-bladder can be excluded if the patient vomits large quantities of bile. The direction and amount of force which produced the injury, as well as the extent of surface which was exposed to the violence, must also enter into consideration in determining the location and extent of the visceral injury. In contradistinction to the liver and spleen, rupture of the intestine must be suspected in case the force is applied over the median line anteriorly, forcing the intestines directly against the spinal column. Berger and Verneuil speak against primary resection and suturing in these cases, and advise the formation of an artificial anus. The great difficulty which presents itself to the surgeon is the absence of positive diagnostic symptoms.

In a recent paper Dr. Weir enumerates as the most prominent symptoms, collapse, rapid respiration, frequent wiry pulse, vomiting, thoracic respiration, emphysema, and absence of hepatic dulness. The last symptom, when present, is one of the most certain signs indicative of the existence of perforation, but it is also necessarily absent in all cases in which the liver has become fixed and immovable by inflammatory ad-

hesions prior to the accident. Emphysema and collapse are the two most important and reliable symptoms upon which to base a probable diagnosis soon after the accident has occurred. Extensive extravasation usually does not take place, as the experiments of Jobert upon dogs have shown that if the intestine is completely divided, the ends may contract by their circular fibres, and thus prevent escape of the intestinal contents. Of all the cases so far reported, the rupture was found almost uniformly in the small intestine and in preference in the first portion of the tract, the duodenum and the jejunum—an important hint in searching for the seat of laceration, on making abdominal section. The shock attendant upon this accident is more apparent than real, and is in no ratio to the gravity of the injury. It must also be remembered that hemorrhage is an important element of danger, and, when considerable, it may simulate the existence of shock. So far, the only case on record in which laparotomy was performed for traumatic laceration of intestine is reported by Mr. Owens, of London, who found the laceration, and sutured and returned the bowel. Unfortunately the patient died. Duplay affirms that the rupture, as a rule, is complete, and as such an accident must be uniformly fatal, abdominal section appears to be the only chance for the recovery of the patient, and should always be resorted to whenever the history of the case and the symptoms indicate the presence of this lesion. As the intestinal coats have undergone no pathological alterations, typical circular resection and suturing of the bowel should be practised in preference to the advice given by Chavasse, Berger, and Verneuil of establishing an intestinal fistula.

INTESTINAL OBSTRUCTION.

The treatment of intestinal obstruction by abdominal section is still in its infancy, but in view of the almost hopeless condition of patients suffering from obstruction due to permanent organic changes, the results which have been obtained by operative procedures should stimulate us to abandon the expectant treatment for more positive measures. Schramm has collected 190 cases of intestinal strangulation treated by laparotomy, including three cases observed by himself in the practice of Mikulicz. He alludes to the difficulties encountered in the diagnosis of these cases and pleads in favor of early operative interference. Of this number, 64.2 per cent. died, the mortality before the antiseptic treatment of wounds being 73 per cent., and since that time 58 per cent. The cause of strangulation and mortality attending each kind may be gleaned from the following table.

27	times	invagination . .	8	cured,	19	died.
49	"	bands, or intestinal diverticula . .	13	"	36	"
16	"	adhesions . . .	7	"	9	"
11	"	reduction *en masse*	6	"	5	"
10	"	torsions	1	"	9	"
12	"	knotting of bowel	4	"	8	"
12	"	internal strangulation	4	"	8	"
7	"	foreign bodies . .	4	"	3	"
38	"	neoplasms . . .	16	"	22	"
8	"	unknown causes .	5	"	3	"

The results of operations for internal strangulation will improve as soon as physicians recognize the insufficiency of the expectant plan of treatment and resort to timely operative measures before the strength of the patient has been exhausted, or the cause of strangulation has led to extensive secondary pathological changes in the tissues about the seat of strangulation. Recently Kussmaul has introduced irrigation of the stomach as a means of treating intestinal obstruction. While this measure does not exert any positive curative effect upon the cause of obstruction, it serves as an efficient palliative by diminishing hypostatic pressure and subduing increased peristaltic action, conditions which necessarily aggravate the symptoms of obstruction.

1. *Intussusception.* Until recently, the operative treatment of invagination has been considered by the majority of the profession almost in the light of a criminal procedure. At present, the indications are that most surgeons would resort to it in all cases when severe symptoms are present which would indicate the existence of acute or chronic obstruction from this cause, and not remediable by medical treatment or local measures. In cases in which no adhesions have taken place between the intussusceptum and the intussuscipiens, reposition can frequently be effected by the administration of an anæsthetic for the purpose of relieving abdominal tension, manual or instrumental attempts at reduction, inversion of the patient, forcible rectal injection of water, and massage over the invaginated bowel. The injection should be made slowly and uninterruptedly until resistance is overcome, but also with sufficient care to prevent rupture of the bowel.

If that measure fail to effect a reduction, no time should be lost in resorting to abdominal section with a view to facilitate disinvagination by direct manipulation. If by traction, direct compression, dilatation of neck of intussuscipiens, separation of adhesions, etc., reduction is not accomplished, circular resection of the invaginated bowel and the formation of an artificial anus above the invagination present themselves as the only means to save life within the range of operative surgery. The formation of a preternatural anus is preferable in cases in which a large portion of the bowel has become invaginated, and again where the general condition of the patient is so grave that the more severe operation of enterectomy is contraindicated.

In 51 cases in which laparotomy was done, reduction was successful in 26—18 children with 4 recoveries, and 8 adults with 5 recoveries. So far, no child less than six months old has recovered after operation. In the 25 cases in which reduction failed to be accomplished, or in which no attempt was made, in 4 the abdomen was closed without any further attempt being made; in all of them the result was fatal. Of 11 cases of resection, only 1 recovered, and this was Czerny's case, in which the disinvaginated bowel was resected on account of malignant disease. In 9 cases enterotomy was performed, as reduction was found impossible, and circular resection was deemed impracticable; in all, except one, death occurred a few hours after the operation. In the latter case life was prolonged for two days, the patient being an adult female.

So far, success has attended abdominal section for invagination in cases in which disinvagination by direct

manipulation was accomplished, an experience which argues strongly in favor of an early operation before reduction is rendered impossible by additional pathological conditions. It may be stated, as a rule, that temporizing measures should not be relied upon for more than two days.

In the case of adults, when chronic symptoms of obstruction precede an acute attack, the invagination is often due to the presence of a tumor upon the inner surface of the intestine, a condition so well illustrated by Czerny's cases reported by Fleiner. The first patient was forty-five years of age, and an adeno-carcinoma of the ileocæcal valve produced invagination of the lower portion of the ileum into the colon. The stenosis was partial and chronic; but when invagination occurred, the symptoms of obstruction became sufficiently urgent to justify a resort to laparotomy, which was performed in the median line. The seat of obstruction was readily found, and the invagination was corrected. Circular resection was performed, but the patient died on the following day of peritonitis. In the second case, a man fifty-two years of age, the symptoms of obstruction appeared suddenly. He recovered partially from this attack, and came under Czerny's care six weeks after the acute attack. A tumor, freely movable, was found close under the right costal arch. The diagnosis was narrowed down to either a floating kidney, with symptoms of strangulation, or intussusception produced by a tumor of the intestine, with the probability in favor of the latter. Abdominal section revealed the correctness of the latter supposition. The ileum had slipped into the colon, and had ascended as high as the right flexure of the colon. The invagination was reduced without difficulty. At the apex of the invaginated portion a carcinomatous tumor was found. The growth was excised with a broad, healthy strip of the intestinal wall, and the wound sutured. The patient was discharged on the twenty-eighth day, and presented himself four months later in excellent health. That the prognosis would be more favorable if the invagination is caused by a benign tumor of the intestinal wall, is apparent. If in such cases disinvagination is possible, an incision into the bowel will enable the surgeon to remove the tumor, either without or only with partial resection of the intestine, and the operation is finished by closing the wound with a Lembert's or Czerny-Lembert's suture.

2. *Enterolithiasis.* The subject of intestinal obstruction by an enterolithiasis has been prominently brought to the attention of the profession by Dr. Lange and Dr. Beam. Dr. Lange's patient was a woman sixty years of age, who had for a year suffered at times from colicky pains, which were attributed at the time to the passage of gall-stones. She was suddenly attacked with symptoms of acute intestinal obstruction; and when visited by him four days later, she was in a condition of collapse. As an operation offered the only possible chance of recovery, median laparotomy was performed. On opening the peritoneal cavity, a considerable quantity of turbid, flocculent serum escaped, and after the omentum had been lifted, the small intestine presented itself moderately distended and matted together by recent adhesions. Tracing the distended bowel, in a few seconds a hard lump was felt in the interior of the intestine, below which the bowel was entirely collapsed. It was evident that the obstruction was caused by this foreign body, which was removed through a longitudinal incision in the bowel. The intestinal wound was closed with a double row of sutures, and the abdominal incision united in the usual way. The patient died eight hours after the operation. The mass removed was sufficiently large to occupy the entire lumen of the intestine, and on section showed in its centre a crystalline round nucleus of cholesterin, about the size of a small walnut, around which, in concentric layers, was a brownish crust, varying in thickness from a fourth to one-half centimetre. The concretion had undoubtedly formed during the passage of the gall-stone.

An enterolith of similar size and structure has been recently shown me by Dr. Ira Manley of Markeson, Wis., which he removed from the lower portion of the small intestine of a woman who had suffered a long time from intestinal obstruction, which finally proved fatal.

In Dr. Beam's case the enterolith had become arrested in the ileum just above the ileocæcal valve, where it gave rise to acute obstruction. Laparoenterotomy was performed, and the patient recovered. The foreign body was as large as an English walnut, and contained a nucleus as large as a buckshot. As in most specimens heretofore examined, the nucleus of the enterolith was composed of a gall-stone. The previous history of gall-stone should be remembered in considering the nature of the cause of the obstruction, and when a probable diagnosis can be made an operation should not be delayed, as the foreign body may also give rise to perforation.

3. *Enterostenosis.* Non-malignant cicatricial stenosis of the intestine as a cause of intestinal obstruction, if circumscribed and not multiple, offers one of the most favorable conditions for operative interference. In cases of this kind the intestine on the proximal side of the stricture will be found enormously dilated, and this condition will greatly facilitate the detection of the seat of obstruction. Typical circular resection should be performed, as it is the only measure which promises a permanent recovery. Intestinal stenosis due to malignant disease calls for enterectomy or enterotomy, according to the extent of the disease, the condition of the adjacent organs, and the general condition of the patient.

4. *Internal strangulation.* The remaining causes of obstruction included under the common term internal strangulation, comprising volvulus, torsion, internal hernia, and strangulation by bands of cicatricial tissue, are the cases which have yielded such a large mortality after abdominal section simply because the operations were delayed for too long a time. These cases, when treated by timely interference, ought to furnish the most favorable conditions for abdominal section, as many post-mortem examinations have shown that a slight interference might have saved the patients' lives. The existence of intestinal obstruction, acute and chronic, is characterized by a familiar complexus of symptoms, so that the condition is readily recognized; but the location of the obstruction is frequently surrounded by many difficulties. As pain is not always referred to the seat of obstruction, it constitutes an unimportant symptom in localizing the lesion. Meteorism begins on the proximal side of the obstruction; consequently, when the obstruction is located below the sigmoid flexure it is first observed over the descending colon; when in the trans-

verse colon, over the ascending colon; and when in the small intestine, over the umbilical region. Vomiting of intestinal contents will take place early if the obstruction is located high up; if low down, it is a late symptom. True stercoraceous vomiting indicates that the obstruction is located somewhere in the large intestine. Careful palpation of the abdomen and, in doubtful cases, manual rectal exploration will constitute important aids in determining the location and nature of the obstructing cause.

Peritonitis is no contraindication to abdominal section, but the operation should be done, if possible, before this complication appears. If after a most thorough and careful examination, we are unable to ascertain the seat of the obstruction the abdomen should be opened in the median line for manual exploration. A dilated intestine would indicate that the cause of the obstruction is lower down, while a collapsed bowel can only be expected on the peripheral side of the obstruction. If the cause of the obstruction is not found by the usual methods of examination, a systematic search should be made for the ileocæcal region, and the intestine explored inch by inch, in both directions. When the patient is still in good condition, and the abdomen is sufficiently soft and yielding for making the examination, localization of the obstruction can usually be made without great difficulty. When opposite conditions are presented, when the patient is in a condition of collapse, and the abdomen tympanitic and tense, and the seat of the obstruction cannot be readily located, Nélaton's laparoenterotomy should be performed in the right iliac region, as affording the best chance for the relief of most urgent and dangerous symptoms. When gangrene of the bowel is found typical, circular resection should give way to the formation of a fecal fistula, if the obstruction is situated sufficiently low down, so that such a procedure will not interfere with the maintenance of nutrition should the patient recover from the operation.

Roser has made the observation that after correcting a volvulus at the sigmoid flexure the torsion of the bowel is liable to return. To prevent such an accident, he advises that the loop of intestine, when placed in proper position, should be stitched to the abdominal wall by passing a few sutures through the mesentery of the bowel and the parietal peritoneum of the left abdominal wall. After disinvagination, the same precaution is suggested to prevent reinvagination; the sutures in this instance must fix the lower portion of the intussusceptum.

The following concise and practical rules are laid down by J. Grey Smith, for treating intestinal obstruction by abdominal section:

1. Make the incision in the middle line below the umbilicus.

2. Fix upon the most dilated or the most congested part of the bowel that lies near the surface, and follow it with the finger as a guide to the seat of obstruction.

3. If this fail, draw the intestine out of the wound, carefully covering it, until increase of distention or congestion, or both, in one of the coils gives an indication that the stricture lies near.

4. If there be considerable distention of the intestines, evacuate their contents by incision and suture the wound. Never consider an operation for intestinal obstruction inside the abdomen finished until the bowels are relieved from overdistention.

5. Be expeditious, for such cases suffer seriously from shock. The whole operation ought to be concluded in half an hour.

ENTERECTOMY.

Circular resection of the intestine has been on trial for a number of years and has been performed for different pathological conditions. The results obtained thus far show that success depends largely upon the condition of the tissues through which the incisions are made. It may be stated, as a rule, that the healing process progresses most favorably when the resected ends have not undergone inflammatory changes by extension of the pathological conditions which have necessitated the operation. Thus, Jaffe has collected 121 cases of enterectomy, reported since 1876; of this number 36 were done for gangrene of the bowel, with 70 per cent. of deaths or formation of fecal fistula, while of the remaining cases done for intestinal wounds, artificial anus, stenosis, and tumors, only 44 per cent. terminated unfavorably. A study of these cases induced him to decide against the advisability of primary enterectomy for gangrene of the intestine. The same opinion is entertained by von Bergmann. The experience of Billroth also corroborates the opinion, which is now generally accepted, that primary typical enterectomy and enterorrhaphy should not be performed in cases of strangulated hernia and internal strangulation. Of six cases of enterectomy for gangrene operated upon by Billroth, only one recovered, and in this case a fecal fistula formed which, however, closed without further interference in three weeks. In contrast with these cases were five enterectomies combined with extirpation of tumors affecting the bowel primarily or by extension, of this number three recovered.

Clinical experience appears to have definitely settled the course to pursue in cases of gangrene of the bowel, viz., to resort to circular resection and suturing after the intestine has been restored to its normal condition. That resection of a large portion of the intestinal canal is not always compatible with health is well illustrated by a case, reported by Baum, in which he removed 137 cm. of the small intestine in a woman forty years of age. The patient was suffering from strangulated femoral hernia. Taxis was only partially successful. On opening the sac an offensive fluid escaped, and a portion of the omentum was removed. Peritonitis followed and a swelling formed in the abdomen above the crural ring, which broke, and a fecal fistula was established. Rapid emaciation ensued; symptoms of strangulation made a laparotomy necessary. A mass of intestine was found twisted into a bunch which could not be unravelled, and as it was surrounded by an abscess it was resected and the ends of the intestine were united with sutures. Patient recovered from operation and improved for several weeks. Six months later progressive emaciation resulted in death. At the autopsy the seat of resection could not be found, showing how completely and perfectly the intestinal wound had healed. The reporter was of the opinion that death was caused by the great shortening of the intestinal tract. In 1881, Koeberle resected 205 cm. of the small intestine in a girl twenty-two years of age on account

of multiple stenoses of the bowel. The patient made a favorable recovery. Kocher has quite recently removed by resection 160 cm. of small intestine for gangrene in a case of strangulated hernia. The patient recovered, and at the time the report was made, remained in good health.

Notwithstanding the favorable results obtained by Koeberle and Kocher, Baum's case should indicate to us that there must be a limit to the extent with which resection can be practised with immunity, and that in multiple lesions of the intestine with intervening healthy portions of the bowel, it would be preferable to make multiple resections rather than to include a too extensive tract of healthy intestine with the injured or diseased portions. Nearly all operators emphasize the importance of not interfering unnecessarily with the vascular supply of the bowel for fear of causing gangrene of the resected ends. Lauenstein is so strongly convinced of the importance of this precaution that he claims the portion of intestine deprived of its mesentery always becomes gangrenous; consequently, in such cases he advises resection of that portion of the intestine, rather than trust to the doubtful restoration of the vascular supply by collateral circulation. That it is important to interfere as little as possible with the blood supply of the resected ends of the bowel no one will doubt, but that in the case of the small intestine this fear has been overestimated, I am convinced. During my experiments on the pancreas last year, I often detached the mesentery from the duodenum and upper portion of jejunum in dogs and cats to the extent of from two to twelve inches, and yet gangrene of the bowel occurred only in exceptional cases. The vascular supply was restored either by the denuded surface of the bowel coming in contact and forming adhesions, the detached portion of the intestine assuming the shape of a shoe, the open portion corresponding to the cicatrix between the denuded surfaces, or the circulation was restored by the growth of new vessels of large size along the detached portion of the bowel, thus restoring to perfection the mesenteric circulation. The apprehension of causing gangrene by even a slight interruption of the circulation appears to be well founded in resection of the large intestine. Czerny lost two cases of resection of the colon from gangrene produced by this cause. Lauenstein has found three similar cases recorded in which, during operations on the stomach, the transverse colon was detached more or less from the mesocolon. We should, *â priori*, expect a greater liability of gangrene to occur from a limited interruption of the circulation in operations upon the large intestine from the larger size of the tube, the more scanty blood supply, and more particularly from the greater difficulties encountered in the formation of the collateral circulation.

Appended to the report of a successful case of resection of the large intestine for malignant disease, Weir gives the statistics of 35 cases in which excision of a cancerous intestine was resorted to, and in all save one (Schede's) the disease had involved the large intestine. Of this number, it is to be noted that of the five cases in which the operation was done during the exhaustion attendant upon the acute obstruction of the bowel, all died from the shock of the operation, hence this condition is considered by Schede to contraindicate the operation. Of these 33 cases, there was a mortality of 17, or 51.5 per cent., only a little greater than that which results from resection of the large intestine from other causes and which is given by Maydl at 50 per cent. Aside from the shock, 10 died within forty-eight hours; in a number of cases the progress was complicated by perforative peritonitis and intestinal fistula. When the latter occurred in the course of an otherwise favorably progressing case, it, as a rule, closed later spontaneously. The perforation was due either to faulty suturing or gangrene of the margin of the wound from detachment of the mesocolon. In cases in which the disease returned, it took place in 3 cases in less than one year, in 4 others between one and two years, in 1 case in over two years, and in Gussenbauer-Martini's case the patient was free from disease four years after the operation.

The propriety of excision of the colon for malignant disease can, therefore, not be questioned; the more so if it is found, on exploration, that the diseased tissue cannot be removed, an artificial anus can be established at once with or without excision, which will at any rate remove the symptoms due to obstruction. In two of Billroth's cases in which the cancer affected the descending colon in one instance, and the sigmoid flexure in the other, so much of the bowel was removed that the ends could not be united; an artificial anus was established, but in both instances a fatal termination followed, in one from collapse, and in the other from septic peritonitis.

(*To be continued.*)

THE UNION OF NERVES OF DIFFERENT FUNCTION CONSIDERED IN ITS PHYSIOLOGICAL AND SURGICAL RELATIONS.

THE ANNUAL ADDRESS OF THE PRESIDENT OF THE AMERICAN SURGICAL ASSOCIATION,
Read April 28, 1886.

BY MOSES GUNN, M.D.,
PROFESSOR OF SURGERY IN THE RUSH MEDICAL COLLEGE OF CHICAGO.

FELLOWS OF THE AMERICAN SURGICAL ASSOCIATION: Custom, if not organic law, requires the President to open the proceedings of the various annual medical conventions by an address of a more or less formal character. Custom, too, in all similar bodies, generally requires this officer to select the subject which he proposes to consider; and thus there has naturally resulted an indulgence in a wide range of thought, from matters of simple history to abstruse disquisition.

My immediate predecessor, in his address one year since, suggested that, in this Association, a *résumé* of the progress of surgery for the previous years, or some especial scientific subject, should, in the future, constitute the subject-matter of the President's Address. Although the Association did not formulate and enact this suggestion as an amendment to our By-Laws, I propose to comply with its spirit, and shall present a few thoughts on certain points in the physiology and surgery of motor, sensory, and moto-sensory or mixed nerves.

Previous to the investigations of Magendie and Bell, no clearly defined efforts had been made to differentiate the motor and sensory nerves. It is true that Walker had, some years previously, asserted this difference and had announced the fact of a difference between the

roots of the spinal nerves, but had erroneously attributed motor properties to the posterior roots. It remained for Magendie, followed and supported by Bell, to establish clearly the fact of the motor qualities of the anterior, and the sensory qualities of the posterior roots. With the establishment of this truth, expressed, as it was, in language which emphasized the different qualities in the nerve trunks, there was born, also, the idea that the difference was intrinsic; a property appertaining to the nerve tubules and fibrillæ themselves. In other words, that a motor nerve was possessed of motor qualities by virtue of its anatomical and physiological organization; and that for identical reasons a sensory nerve was endowed with sensory qualities. No anatomical or histological difference between the motor and sensory tubules and fibrillæ was discovered, nor, so far as I am aware, sought for; and, certainly, the subtlety of nerve force itself was not calculated to encourage an attempt at differentiation in that respect. Still, the idea has generally, I think universally, prevailed that the difference between motor and sensory nerves was intrinsic, and depended on a peculiarity of the nerve itself; certainly the language generally used by writers and speakers conveys this idea. Is this the fact? or is the difference to be found in extrinsic conditions, viz., the anatomical organization at either end of the nerve? Is there a real difference in the nerve itself, such as enables a motor nerve to transmit only an order from the brain, or an influence from some other nervous centre to a muscle, and a sensory nerve to transmit only an impression received at its periphery to the brain or some minor nervous centre? Is an afferent nerve a nerve of that quality, and is an efferent nerve possessed of its efferent qualities intrinsically, or, so to speak, accidentally? Or, is the nerve trunk simply a conductor of a form of force, the effect of which depends entirely upon the machinery at either end of the nerve?

Upon the facts in the case which these questions seek to evolve, depends the possibility of satisfactory results in the section and physiological reunion of divided compound nerves, and the grafting of one compound nerve upon another where there has been so great a loss of the trunk of a nerve as not to permit the approximation of the distal to the proximal portion of that nerve. Success in achieving satisfactory results by such operations, or a uniform lack of success, must afford, likewise, a tolerably reliable answer to these interrogatories—much more reliable than experiments upon some of the inferior animals, especially dogs, cats, rabbits, etc.

As to the literature of this particular branch of the subject, I have not been enabled to make an investigation. I remember, however, that thirty years since, Prof. J. Adams Allen, in an article which he contributed to the *Medical Independent*, published in Detroit, relative to Prof. H. F. Campbell's announcement of the excito-secretor function of the nervous system, used the following language:

"The effect is motory if contractile fibre be present. The effect is secretory if secreting organs be supplied. The effect is sensation if sensitive neurine be reached."

In the same article he further says:

"Heat will melt iron, explode gunpowder, harden clay, and destroy or fix colors. Are these several results indicative of any diversity in the force of heat itself? Are they not, rather, indicative merely of variety in the bodies acted upon? So it is with the excitor force which commands the tiny fibrillæ and cells in the nervous arc. They receive and transmit but the *single impulse*—and in a *single* manner. *The effect produced, then, depends upon the structure and condition* of the organ reached. . . We might with equal propriety speak of a modification in the essence of the galvanic current, when at one time, by ingenious mechanism, it is caused to print a telegram, and at another to decompose a mineral, at another to kindle a Drummond light."

Professor Allen was writing on the general subject of nervous action, including the sympathetic with the cerebro-spinal system, and the following paragraph, although written with reference to a wide consideration of nervous action, is not without significance in the more limited view in which I am indulging in reference to motor and sensory functions. He says:

"It is, perhaps, safe to assume as probable that parts supplied with cerebro-spinal nerves exhibit more definiteness in their reflex phenomena than those supplied mainly by fibres from the ganglionic chain. But it remains to be proved that there is any more real difference between these two classes of nerve fibres than exists between striated and non-striated muscular fibres."

It is only in logical harmony with the whole of the paper, of which this is a quotation, to understand the expression in the last sentence "than exists between" as meaning *than depends upon* "striated and non-striated muscular fibres."

These generalizations are fully supported by anatomical structure, there being no anatomical difference discernible to distinguish a motor from a sensory nerve, except that which is found in its origin and at its final distribution.

The questions which interest the practical surgeon are these: Is the difference between motor and sensory nerve tubules and fibrillæ intrinsic—*i. e.*, anatomical; or does the difference depend simply and alone upon the physiological machinery at the ends of the nerves? And, is there a difference in nerve force itself?

In answer to these questions, we may appeal to experiments upon inferior animals, and to the results of surgical operations on man. Experiments on inferior animals, though of value, require severe scrutiny, or they may mislead; the nervous system of some animals tolerating lesions which would be destructive of function in man.

Reference will be made in this paper only to experiments which seem to yield positive, rather than negative evidence; and as some of the positive evidence which I shall offer completely invalidates some, at least, of the experiments, I shall not, I hope, be deemed illogical or prejudiced.

Philipeau and Vulpian divided, in dogs, the pneumogastric and sublingual nerves and united the central end of the pneumogastric with the distal or peripheral end of the sublingual. They, also, divided the lingual branch of the fifth nerve and the sublingual, uniting the central end of the lingual branch of the fifth with the peripheral end of the sublingual, tearing out at the same time the central end of the sublingual. Subsequent observation of, and experiment on, these cases showed that irritation, both of the trophic and special

sense nerve, aroused muscular action in the muscles to which the sublingual is distributed; and that pinching the sublingual elicited expressions of pain, thus showing that a conductor composed of a special sensory and a motor nerve, or of a trophic and a motor nerve, united end to end, transmitted nerve force in both directions, the effect being that which is normal in the organ reached, viz., motion in the muscle and perception of impression, or sensation, when the force reached and impressed the brain. Nerve force travelled in both directions over the *new routes* established by the united trophic and motor nerves, and also by special sense and motor nerves, the effect being determined by the machinery at either end of the route.

Doctor Rawa,[1] of Kiew, has made numerous experiments on rabbits, cats, dogs, pigs, and goats, uniting in some instances the central end of one compound nerve with the peripheral end of another compound nerve having a different destination; in other instances, the central end of a sensory, with the peripheral end of a motor nerve, and *vice versâ*. In these experiments he has not united the nerve trunks by abutting them end to end, but he has lapped them, or turned them up on one another and bound them lightly together, instead of suturing them. The results of his experiments he sums up as follows:

"*a*. The central nerve apparatus is enabled to innervate organs which do not belong to it, as soon as those organs are artificially brought in nervous connection with it.

"*b*. The central nerve apparatus is the chief nourishing agency (Haupternährungsherde) for the peripheral end.

"*c*. For the reëstablishment of function in the peripheral end of a divided nerve, which has been united to the central end of any other nerve, time is required, which varies from six to sixteen months."

In regard to statement *b*, viz., that the central end is the chief nourishing agency for the peripheral end, there may be a question as to the entire correctness of the assertion. The distal end of a divided and ununited nerve certainly atrophies; but it may be a question whether this change is primary or secondary. A muscle deprived of nervous supply will atrophy; but the atrophy is probably the direct consequence of disuse, and thus secondary, for, a muscle with full nervous supply, if disused, undergoes the same change, and here the change is, unquestionably, the consequence of inaction. In the divided nerve the same conditions obtain, and it is probable that the atrophy is, as in the muscle, the consequence of disuse. Nutrition in a nerve is not, probably, greatly different from nutrition in other succulent tissue, and it is not philosophical to suppose that, as an atrophied nerve becomes restored, it is restored by proliferative outgrowth from the proximal, along the tubules of the atrophied distal portion. Such a method of restoration certainly does not obtain elsewhere in the higher animal organizations.

These experiments of Dr. Rawa were made during the three years preceding July, 1883.

In April, 1880, Dr. E. P. Davis, then an assistant in the physiological laboratory of Rush Medical College, made for me, at my suggestion, the following experimental operation, a report of which I here give in his own words:

"A black and tan dog, weighing about ten pounds, was anæsthetized, and under careful antiseptic precautions the following experiment was made. The axillary plexus was exposed at his lower half. The median nerve was then severed after its bifurcation,[1] and also the ulnar and radial. The outer head of the median nerve was united to the ulnar, proximal to distal extremity, by a single fine catgut suture. The ends were carefully brought into apposition without tension. The inner head of the median and the radial were then united in the same way. The limb was brought to the dog's side, a plaster-of-Paris bandage was put about the thorax, confining the limb; the immediate dressing of the wound was antiseptic. The animal was slung in a box for ten days. At the expiration of this time the plaster was removed, and the wound found healed by first intention. Complete paralysis of motion and sensation was present. In somewhat less than four weeks this began to disappear, and when the animal was subsequently subjected to examination by Professors Gunn and Allen, and a perfect condition of nervous impulses of motion and sensation was observed, full muscular power and nutrition existed."

In this experimental operation it will be observed that all the main trunks of the axillary plexus were divided, and that in uniting the heads of the median with the radial and ulnar nerves, the whole nervous supply was left to come through the two heads of the median to the radial and ulnar, and that the distal portion of the median was left entirely without nervous supply; and yet when the radial and ulnar connections with the central heads of the median became established, there was no paralysis, even in the muscles or integument supplied by the median. The explanation of this fact is reached through another experiment to which I shall presently call attention. The paralysis was complete, both as to motion and sensation, for more than four weeks after the severing of the nerves; and when restoration of nervous currents through the central median heads and the peripheral radial and ulnar ends took place, all paralysis completely disappeared, even in the parts supplied by the median which had no *direct* communication with the brain; the dog, accompanying Dr. Davis on one occasion on a walk of several miles, behaving as lively dogs are wont to do under such circumstances, and apparently without fatigue. It seems to me, that this experiment was a crucial one, and that, so far as dog physiology is concerned, its evidence is entirely conclusive.

During the summer and autumn of 1885, Dr. H. W. Sheldon, first interne of the Presbyterian Hospital of Chicago, made, at my request, a series of operations on dogs, which involved the removal of a section of the ulnar nerve and the grafting of the peripheral end upon the side of the intact median. These operations were generally successful and *apparently* indicated that, through the engrafted connection, the parts supplied by the ulnar received their innervation. But another experiment, suggested and made by Dr. Sheldon himself, destroyed completely their value. He simply removed

[1] Centralblatt für die medicinischen Wissenschaften, No. 34, 1883.

[1] The Doctor is evidently viewing the nerve from a distal position.

a section of an inch or more of the ulnar trunk, and as soon as the wound was healed and the animal was relieved of the confinement incident to the dressings, it was observed that motion and sensation in the parts supplied by the ulnar were in no wise impaired. In this experiment the parts normally supplied by the ulnar were left completely without *direct* nervous supply, as were also the parts normally supplied by the median in Dr. Davis's operation; and yet there was no paralysis in these parts, sensation and motion being perfect in all portions of the forearm and paw. Whence, then, the innervation? The investigations of Arloing and Tripier, cited by Markoe in the September number of the *Annals of Surgery*, show that in the dog, as well as in several other inferior animals, "there are certain tubules which pass from one nerve to another in a continuous or in a reverse direction, to be lost on the nerve to which they have attached themselves at a varying distance on the adopted trunk. . . . . The most abundant anastamosis, however, is found near the peripheral termination of the nerves, where all the terminal twigs unite to form the network of final distribution." Thus there is furnished an *indirect* and *retrograde* route for the conduction of nervous force; and thus is explained what was observed in the two experiments of Drs. Davis and Sheldon described above, where the areas deprived of *direct* innervation were fully supplied by and through a *recurrent* and *indirect* route. In the experiment made by Dr. Davis, the route between the brain and the paw and muscles of the forearm was through the inner and posterior cords of the axillary plexus, the outer cord serving only as a route between the brain and the areas supplied by the musculo-cutaneous nerve. Thus we see that—at least in the dog, where there is a free peripheral anastomosis—the exsection of a single nerve trunk is not attended by marked loss of sensation or motion.

Nerve suture in man has become a recognized operation, both as a primary and a secondary procedure; and its results, as well as experimental operations on inferior animals, may be advantageously invoked for light upon Professor Allen's generalization, viz., that the difference in function of motor and sensory nerves depends entirely and solely upon the organization at either end of the nerve. Let us consider, for example, such a case of nerve suture. It is not probable that the adjustment is ever absolutely perfect, so that the so-called sensory tubules and fibrillæ in the distal portion are brought in contact with corresponding elements in the proximal portion, and that the motor filaments are brought into like harmonious conjunction. In reply to this proposition, it may be said that Nature, in the proliferative process of repair, possesses elective powers. While this may be quite true, it is not proven, nor will it be susceptible of proof until we can individualize the sensory and motor elements of a nerve. It may be remarked, too, that in the experiments of Rawa, where he laid the nerve trunks to be united, side by side, instead of end to end, this invoked elective power is subjected to a most trying test—a test that challenges our utmost faith in behalf of Nature's resources.

But if we concede this elective power in Nature's reparative efforts to unite the ends of severed compound nerves, how shall we dispose of the experiments of Rawa, who crossed and united the severed pneumogastric and sublingual nerves, and restored functions, respectively, to the parts supplied by each? Such results prove conclusively that the motor, sensory, and trophic powers of nerves depend, not on the nerve itself, nor on a difference of nerve force, but on the organism at the ends of the nerve.

Confusion of muscular action may well be anticipated after crossing and uniting nerves supplying antagonistic sets of muscles, but, even here, time and continually repeated efforts may be relied upon to bring order out of confusion. Professor Stephani is reported, in the November number of the *Deutsche medizinal Zeitung*, to have succeeded four times in six experiments in uniting the distal end of the median with the proximal end of the musculo-spiral, and the distal end of the latter with the central end of the former. Following immediately on the operation were complete paralysis and atrophy; but gradually in the course of six to eight months there was not only restoration of muscular power, but harmony of action was also realized to a sufficient extent to enable the animals to run, but perfect extending power of the paw was not realized. The summary of Stephani's experiments, as reported in the periodical above referred to, makes no allusion to the function of sensation in the skin areas supplied by the nerves operated on, but it is presumable that in this respect there was restored function.

Nerve suture as a practical surgical operation, I have already observed, seems to be fairly established, both as a primary and secondary procedure. A primary will probably yield earlier results than a secondary operation. The distal portion not having undergone atrophy, will not require the time to regain lost nutrition and suspended function, which will be necessary in the case of a nerve in which atrophy has already taken place.

The intergrafting of a section of a nerve of an inferior animal, to replace extensive loss of a nerve trunk, probably, will be of too uncertain success to constitute it a standard operation. But can the grafting of the distal end of a nerve, in such a case, upon the side of, or into the trunk of an adjacent nerve secure to it a supply of nerve force? Rawa's results in his experiments of uniting nerves by side contact, would indicate a possible affirmative answer. It was with the view of determining this point that I suggested the experiments made by Dr. Sheldon last summer and autumn. But we have seen that, unless we divide all the nerves as was the case in Dr. Davis's operation, these experiments in dogs are valueless, the free distal anastomosis affording a retrograde route for nervous force. We must look, then, for the solution of this question, to the comparatively rare opportunities afforded in the course of surgical practice, to institute experimental operations in man. Such opportunities may be encountered in cases of accidental injuries causing extensive loss of nerve structure, or where, for the removal of a large neuroma, similar nerve sacrifice is required. In the fifth number of the *Gazette Hebdomadaire*, 1876, there is reported a case occurring in the service of M. Després, at the Cochin hospital where there occurred such an extensive destruction of the median nerve as to preclude the possibility of approximating the ends. He, therefore, determined to ingraft the distal end of the median with the trunk of the ulnar. Separating the filaments of the ulnar trunk he interwove the separated or fringed filaments of the

distal median, thus accomplishing what he terms, "*suture par rapprochment et par intrication.*"

Fifty-four days after the operation the patient left for Vincennes with partially restored functions in the parts supplied by the median nerve.[1] Such restoration, though only partial at so early a date, certainly gave promise of further improvement; and would warrant further operative procedure in the direction of nerve grafting.

I have already stated that one of the ends in view, in the graftings made for me by Dr. Sheldon, was to determine the value of grafting a divided nerve upon the trunk of an adjacent nerve. I was at that time uninformed of Després's operation, an account of which I have just epitomized; indeed, it was not until I had made the operation on a patient who required extensive exsection of the ulnar nerve, that my attention was called to this case. Consequently, at the time of the operation I was not aware that I had a precedent for it.

On the 1st of December, 1885, I had occasion to resect between three and four inches of the right ulnar nerve for the removal of a neuroma in a male patient, thirty-six years of age. Having anxiously awaited an opportunity to make such an experimental operation, I proceeded at once to graft the distal portion of the divided nerve upon the trunk of the median. Desiring to avoid any injury to the latter nerve, and encouraged by the successes of Rawa in uniting and restoring function by side contact, I denuded the trunk of the median of its sheath, so that I was enabled to lay the broadly chamfered distal end of the ulnar upon the denuded side of the median, to which it was fastened by three fine catgut sutures. The operation, dressings, and treatment of the wound were successfully conducted in reference to asepsis of the wound. Healing was without suppuration, but was not absolutely complete till the eighteenth day. Immediately after the operation there was complete paralysis of motion and sensation in the parts supplied by the ulnar. On the eighteenth day a careful examination showed a slight return of sensation along the ulnar side of the ring finger. In flexing the hand upon the wrist, there seemed to be contraction in the flexor carpi ulnaris; but in the attempt to flex the fingers, there was no response in the terminal phalanges of the ring and little fingers.

March 3, three months after operation: There is marked increase of sensation on the uinar side of ring finger; no sensation in little finger. No increase in range of motive power; a little more vigor, perhaps, in the action of the flexor carpi ulnaris, as shown by evenness of the flexion, the hand not deviating to the radial side in such action. There is still inability to flex the terminal phalanx of ring and little fingers.

April 8, four months after operation: Patient now feels a very light touch on the ulnar side of ring finger; no sensation to touch in little finger, but there is a feeling of warmth in it; whereas heretofore it has felt, and has been, cold. There is increased muscular power; the patient can now adduct the hand with considerable vigor, but as yet has no power over the terminal phalanges.

The positive evidence which these two cases of nerve grafting furnish at so early dates not only warrants further effort in this direction, but also corroborates the other evidences of the correctness of the postulate, that the function of a given nerve depends entirely upon the machinery at its ends, and not upon any intrinsic quality.

[1] Ce malade part pour Vincennes le 13 (Sept.). A ce moment, le contractions du grand palmaire sont assex efficaces pour relever le main; l'opposant du pouce a pris un peu d'énergie, mais le fléchisseur propre de ce doigt ne transmet aucun mouvement; les tendons des fléchisseurs superficiéls des doigts de la main agissent bein; seul les tendons des fléchisseurs profond, de l'index, et surtout du medius sont faible; la troisième phalange n'est que très-incompletément fléchie, surtout celle de l'index. L'insensibilité persiste toujours au niveau des deux dernière phalanges de l'index et du medius.

ORIGINAL ARTICLES.

A NEAT METHOD OF PERFORMING HELLER'S ALBUMEN TEST.

BY THOMAS S. K. MORTON, M.D.,
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As it is acknowledged that the best and most satisfactory test for albumen in urine is that which depends upon the precipitation of a ring of albumen at the line of junction between the precipitating fluid and the urine poured on top, it may be asked: What are the necessary conditions for the most delicate performance of this test (Heller's)?

These are: a small amount of nitric acid in the bottom of a test-tube, and the gradual addition of perfectly clear urine on top of the acid, care being taken that this be so gently done that the two fluids do not mix.

After enduring a great deal of discomfort from the usual methods of applying this test, I have come to the use of the following method exclusively:

In the first place, take a very small test-tube—for the smaller the tube the smaller will be the meniscus at the junction of the liquids, and which of itself will obscure small amounts of albumen in a large tube—one about 2½ inches long and ⅓ inch in calibre is

the best size. Next fill the tube one third with nitric acid. Finally, but most important—according to the transparency of the urine—fold one or more 3 to 3½ inch diameter filter papers twice, thus making a funnel, and insert its point into the mouth of the test-tube, supporting it by the forefinger of the hand holding the tube (see cut). Then pour into the funnel about a drachm of the suspected urine; it will slowly filter through the paper, and no matter how cloudy before, will run down perfectly clear upon the acid, and, should albumen be present, show it as a sharp-cut white ring at the junction of the two liquids. By this simple procedure, not only are the above conditions most perfectly fulfilled, but much smaller percentages of albumen can be demonstrated, and in a much more satisfactory manner, than by any other method of using this test.

MEDICAL PROGRESS.

A REMEDY FOR CORYZA.—RABOW has repeatedly seen benefit from the following powders, used like ordinary tobacco snuff, which also they resemble in appearance: 1. Menthol, 2 parts; roasted coffee, 50 parts; white sugar, 50 parts; mix, and take as snuff. 2. Cocaine hydrochlorate, 1 part; roasted coffee and white sugar, of each 50 parts; mix, and use as before.—*Dublin Journal of Medical Science*, April, 1886.

ON THE INFLUENCE OF THE VARIOUS CONSTITUENTS OF THE FECES UPON THE MOTION OF THE INTESTINES.—With the view of elucidating the question here indicated, BOKAI has injected 1 c.cm. of a warm one per cent. solution of certain acids, or, in other words, 1 centigramme of each acid, into various parts of the intestines of rabbits, with the following results: (1) Lactic acid caused a very slight peristalsis for three or four minutes. (2) Succinic acid caused more movement, especially of the jejunum and rectum, the cæcum and colon being less affected. Slight tonic contraction and anæmia of the parts were also observed. (3) Valerianic and butyric acids caused marked and persistent hyperæmia, and movement in the jejunum and rectum. (4) Formic acid caused peristalsis, with dilatation of the vessels. (5) Propionic acid dilated the vessels, and caused vigorous movements which did not last long on account of the spasm set up. (6) Acetic acid quickly caused a vigorous contraction of the ileum, but the rectum only responded to a larger quantity, viz., 10 centigrammes. The vessels were first contracted and then dilated. (7) Caproic and caprylic acids acted the most vigorously of all, and in a few seconds caused tonic contractions with extreme hyperæmia. They had the most influence on the colon.

The acids are arranged in order according to their influence on the muscles of the intestine. Lactic acid has no influence on the vessels; acetic and succinic acids cause them to contract; while the rest cause them to dilate. The acids have most influence on the jejunum and rectum, less on the ileum, and least of all on the colon.

Injection of a larger quantity of these acids was followed by vomiting and diarrhœa. In large doses they cause catarrh and inflammation of the intestinal canal. Hence the conclusion that these acids in normal digestion act as the stimuli of peristalsis, and when developed in larger quantity they produce a more vigorous action and ultimately diarrhœa.—*Manchester Medical Chronicle*, April, 1886.

ANTIPYRETIC ACTION OF MORPHINE.—LAUDER BRUNTON and THEODORE CASH, in a brief note in the *Centralblatt für die medicinische Wissenschaften* for April 3, 1886, record their observations on the effect ef morphine upon various classes of animals. Starting from the remarkable observation made many years ago by Weir Mitchell, that morphine exerts but a relatively slight narcotic effect upon birds, they have found that when this drug is administered to members of the group in question, a very marked fall of temperature results, in many cases to the extent of several degrees Centigrade. The decomposition products of morphine show that it belongs to the aromatic series of chemical substances, and it is interesting to find that this drug exerts upon birds the same antipyretic effects which other members of the series produce on mammals. Rückert has shown that morphine also depresses temperature in dogs and rabbits.

SHOULDER-JOINT FRICTION AND INCIPIENT PHTHISIS.—DR. ANGEL MONEY writes as follows to *The British Medical Journal* o April 24, 1886.

My object in this brief communication is to draw attention to a certain physical sign that not unfrequently leads to error. As the first physical sign of incipient phthisis is frequently a mere adventitious sound heard over some part of the apex o the lung, and as the friction produced in the shoulder-joint, by breathing, often imitates very closely these pulmonary adventitious sounds, it is not difficult to understand how mistakes in diagnosis should occur.

I think that there are good grounds for believing that lives are sometimes rejected at insurance offices from a want of knowledge on this point.

The sound produced at the shoulder-joint is almost always of a dry quality, rather creaking than crepitation; but its character varies considerably. It is difficult to prevent its occurrence in those subjects in whom it is heard; so that fixing the joint hardly aids one much in the diagnosis. But the sound is always loudest over the joint itself, and is better conducted along the bones than along the muscles, over which it is usually faintly heard; but in some instances it may even be audible over the pectoralis major below the clavicle. An important point in the diagnosis is the character of the breath-sound at the apex of the lung; when mere joint-friction is heard, there is of course no prolongation or increased loudness of the expiration. The friction-sound, simulating pulmonary adventitious sounds, was first pointed out to me, and, so far as is known, was first drawn attention to, by Dr. Gowers, in his class of clinical medicine at University College. It is of frequent occurrence, and especially, I think, in patients who have suffered from "rheumatism." I have not heard it often in children, and less often in women than in men. There can be no doubt that the practical physician must have become acquainted with the sound, even though he may not have formulated his opinion thereon. If this note should lead to its wider recognition, my end will have been answered.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, MAY 8, 1886.

OPERATION FOR INTRACRANIAL HEMORRHAGE.

IN THE MEDICAL NEWS of last year we published several editorials on the subject of surgical operations upon the cranium, among them one in the number for December 26th, on "The Treatment of Intracranial Hemorrhage." The importance of the subject seems to justify our recurring to it again, especially in view of the fact that we see from time to time, in the medical journals, accounts of cases which indicate that the opinions which we have already expressed are not so generally accepted or adopted as we might hope. Thus, in the *Boston Medical and Surgical Journal* for April 1, 1886, are two reports which have attracted our attention. In one of these, DR. ATHERTON P. MASON tells of a man who received, in a manner unknown, a contused wound on the left parietal boss, with a depressed fracture of the skull. As the symptoms did not appear to be urgent, the wound was dressed, and the patient went off and worked for a week, when he suddenly lost consciousness, and fell in his room. When seen he had a hard pulse of 100, a temperature of 101°, and slow, stertorous respiration. The wound was now opened and some fragments of bone were removed, among them two spiculæ which had penetrated the dura mater and entered the brain. When these were removed, pus welled up from beneath the dura mater and considerable arterial hemorrhage followed. This was controlled by gentle pressure with a sponge, and the wound was dressed antiseptically. In two days the pulse had fallen to 80, and the temperature was normal. Paralysis and aphasia, which were present, increased for about a week, and then gradually disappeared in the course of a month. In a month and a half after the injury the patient was well.

If our understanding of this case is correct, we think that no appearance of safety should have led to the omission of trephining when the patient was first seen, unless he absolutely refused to have it done. Afterward, the operation was a sequence of the plain indications of the case, which at this point is chiefly interesting as a study in diagnosis, and in the interpretation of the phenomena present. The points to which we would especially call attention are those of the tense pulse, and the rise in temperature. As we have before pointed out, these are early symptoms of increased intracranial pressure (see MEDICAL NEWS, Nov. 14, 1885), the first effect of which is to irritate the vagus and vasomotor nerve centres, leading to a slow and tense pulse, and to slow and labored respiration. In this case the pulse was more rapid than is normal. This may be explained by the influence of the pus, which had set up febrile hastening of the pulse, and which was only partly counteracted by the influence just mentioned. The rise of temperature ought also to be attributed to the same cause, although this is often an early symptom of increased intracranial pressure. From this, it will be seen that it is not easy to be sure that the loss of consciousness in this patient was due to a sudden rupture of a meningeal vessel, although we think this to be the most reasonable explanation of all the symptoms.

Passing from this case, we find another, in the same number of the same journal, reported by DR. W. D. BIDWELL. A man was thrice struck on the head by a companion with his fist, on one finger of which was a large seal ring; but he was able to ride home, and to put up his horse. At the end of an hour he complained of being dizzy, and lay down, and four hours after was found to be unconscious, with a temperature of 101°. Twenty-four hours after the injury was received his pulse was 80, his temperature was 102°, his respirations were 40, his breathing was stertorous, his left pupil was dilated, both pupils were insensitive to light, and he had some rigidity of the muscles of the extremities, and free perspiration. In four hours his temperature rose to 102.8°, and his pulse to 92. The reporter here says: "A diagnosis of compression of the brain from hemorrhage had been made, but the external marks of violence were so slight that the brain injury could not be localized, and it was deemed advisable not to resort to operative measures." Two hours afterward the patient died. In the previous account we find it noted that, in addition to marks which did not seem to point to injury of the skull, there was an abrasion of the left ear and a contusion, which might have been made by the stone of the finger-ring, above and behind the left ear. At the autopsy

there was found a fracture of the temporal bone above the left external auditory meatus, which could only be detected on the inside. A sharp fragment of the fractured bone had divided the middle meningeal artery, and a firm clot, four inches long and three and a half inches wide, was found between the bone and the dura mater. There was, also, a bag of serum at the posterior end of the clot, containing about an ounce of fluid.

Here was a case in which all the symptoms pointed to an intracranial hemorrhage, and in which there was the mark of a blow in the course of the vessel which is the most frequent source of such hemorrhages, and yet the reporter considered it inadvisable to operate.

Now, as we have before pointed out, hesitation to operate when there is so strong a probability of the rupture of a meningeal artery falls short of the measure of efficiency which is possible to a surgeon at the present day. We need not repeat what we urged in this connection last December, but it may be worth while to call attention to two new papers which confirm what we then said. One of these papers is by CECCHERELLI ("La trepanazione del cranio in rapporto alle sue indicazioni," *Annali univers. di med. e. chir.*, April–June, 1885). It is a statistical study, and contains a strong recommendation to operate immediately and thoroughly in cases of intracranial hemorrhage and of abscess. The second is a paper of the greatest value by KRÖNLEIN ("Uber die Trepanation bei Blutungen aus der A. meningea media und geschlossener Schädelkapsel," *Deutsche Zeitschrift f. Chir.*, Bd. xxiii. Hefte 3 and 4, 1886). It will be remembered that it was Krönlein who suggested and supervised the work of Wiesmann, to which we have before referred. In the present paper he goes a step further in practical suggestions than the previously gathered facts had warranted. In addition to advising opening the skull for the purpose of evacuating a clot, or of stopping a hemorrhage, Krönlein now insists that a second opening shall be made when the first has not revealed the seat of the mischief. He further assigns the very spot in which such a second opening should be made. In the past three years Krönlein has four times trephined for rupture of the middle meningeal artery. In all the cases the diagnosis was correct. Twice he found and removed the extravasation, and the patients recovered. Twice he failed to find it, and the patients died. His own experience and a careful study of the subject have led him to the conclusion that, thanks to modern antiseptic methods, one need have no concern as to the issue after the removal of a hæmatoma within the skull, unless some complication unconnected with the operation should arise.

As to the points to be selected for the application of the trephine, Krönlein gives some valuable suggestions. In the first place, he has made a study of the usual size, shape, and seat of accumulations of blood from ruptures of the middle meningeal artery. We cannot spare space to repeat his argument; but we may state that it appears that by far the greatest number of such accumulations will be reached by an opening made in a horizontal line drawn around the skull at the level of the upper rim of the orbit, and at a point about an inch behind the external angular process of the frontal bone. But, what is most striking in Krönlein's paper, is the recommendation to follow an opening made at this point, when it has not revealed the extravasation, by another one, made in the same line and just below the parietal boss. This second opening does not increase the danger to the patient, and it does permit the discovery of clots which would otherwise be undetected and unremoved. In the two cases in which Krönlein lost his patients, the clot was in this position and was not found by a single opening. In one of those that recovered, he made the two openings and carried a drainage tube through, inside the skull, from one to the other, after removing a large clot. These experiences led him to the conviction that, in doubtful cases, in which no local injury points to a certain spot as the proper one, it is wise to trephine at the first of the points we have just indicated; and that, if this opening does not disclose the clot or bleeding point, a second opening should be made at the second point indicated. By pursuing this plan, we cannot doubt many a patient's life would be saved which would be lost if the surgeon were not quick to recognize the signs of intracranial hemorrhage, and courageous and skilful in treating it.

For an illustration of what may be accomplished in such cases, we would again point our readers to the admirable and exhaustive paper of WIESMANN in the *Deutsche Zeitschr. f. Chir.*, Bd. xxi. and xxii., and to the instructive though short paper of Krönlein, which has prompted these remarks. Further valuable information may be gathered from an interesting monograph by URBANOWICZ, "Drei Fälle von Schädelverletzungen," etc., published at Frankfort-on-the-Main, in 1885.

UTERINE HÆMOSTATICS.

AMONG novel means for the arrest of uterine hemorrhage is the use of vaginal tampons of peat. LEISRINK, who proposes this method, was led to adopt it from the use in Germany of this substance as a dressing for wounds. He employs small sacs of gauze filled with peat so as to form cylinders one inch and a half to two inches in length, which are divided into compartments by stitching them in different directions, so as to prevent the peat from settling down in a mass. These may be made aseptic by boric acid, corrosive sublimate, or

iodoform. Leisrink has had excellent results from these tampons not only in metrorrhagia, but also in cases of affections of the cervix requiring local applications. So far as the treatment of menorrhagia is concerned, we cannot see that this tampon, which certainly is very troublesome to prepare, has any advantage over one made of antiseptic absorbent cotton. A vaginal tampon stops uterine hemorrhage purely by mechanical means, just as one may stop a hemorrhage from the surface of the body by direct pressure.

HUCHARD advises, in uterine hemorrhage, a combination of ergotine and sulphate of quinine, remedies directed to the contractility of the vessels, with digitalis to influence the circulation, and hyoscyamus to control the irritation and pain. He directs thirty grains each of ergotine and of quinine, and three grains each of powdered digitalis and of extract of hyoscyamus, to be made into twenty pills, of which five, eight, or ten are given daily. The quantity of digitalis and of hyoscyamus seems very small, and it is probable that the pills would be more efficient if it were doubled.

CHÉRON, in the *Révue Médico-Chirurgicale des Maladies des Femmes* for March, refers to some experiments made upon animals, reported by ARDUIN to the Congress of Grenoble in August, 1885, to determine the relative value of ergot, of the muriated tincture of iron, and of antipyrine as local applications for the arrest of bleeding. These experiments proved the superiority of the last.

In consequence of the results obtained by Arduin, COSATI was led to use antipyrine. His conclusions are that it is a powerful hæmostatic, the action of which is shown in a very short time; it is superior to ergotine, to perchloride of iron, and to the thermocautery, and in many cases it ought to be selected because of its antiseptic and antipyretic action. Chéron has used it successfully in a four per cent. solution for the arrest of hemorrhage from a lacerated cervix, which applications of perchloride of iron had only temporarily stopped. He also used it successfully in the hemorrhage occurring in an operation for vesico-vaginal fistula, and in one for perineoplasty. In epithelioma of the neck of the womb, antipyrine may be used by injection or immediately applied, and it lessens the bloody and sero-purulent discharges.

THE SURGERY OF THE LUNGS.

THE surgery of the lungs has a definite, though limited, field, and satisfactory progress has been made in our knowledge of the cases in which operative interference is called for. A recent review of a thesis on this subject by TRUC, appears in *L'Union Médicale*, Nos. 6 and 7, 1886.

Incision of the lung—pneumotomy—is practised for abscess, gangrene, and hydatid cysts. Of 19 cases of non-tuberculous pleuro-pulmonic abscess, treated by incision, drainage, and antiseptic injections, 6 recovered, 8 died, 1 was improved, and 3 were convalescent at the time of reporting. In 13 cases of incision of tuberculous cavities, the mortality after the operation has been about 50 per cent., and the average duration of several was 46 days. In 13 cases of gangrene there was complete recovery in 3, death in 6, and improvement in 4 cases. In hydatid cysts of the lungs and pleura the results have been much more striking. Truc gives only 3 cases in his monograph, but in Thomas's recent work on the hydatid disease 32 cases are noted, 25 of which were in Australia; of the total number, there were 27 recoveries and 5 deaths.

Resection of portions of the lung has been performed in 5 cases in phthisical patients. The operation has proved fatal in each instance, and in the case of Block, who excised both apices, the woman died almost immediately, and Block, to avoid the consequences of an inquiry, committed suicide. In two instances portions of the lungs have been resected for malignant growth; in 1 case, a girl of eighteen, with complete recovery, in the other death took place twenty-four hours after the operation. In a case of wound of the lung with uncontrollable hemorrhage, Omboni opened the chest, incised the wounded portion of lung and looked for the ball. The patient died of septicæmia on the eleventh day.

Intrapulmonary injections have been practised extensively of late years, but their value is still undetermined. Certainly, in fetid cavities, tuberculous or bronchiectatic, disinfection may in this way be thoroughly effected, and this probably constitutes the most important indication for this method of treatment. Not much can be expected from this plan as a curative measure in ordinary phthisis when cavities have formed, but in the early stage it is quite possible that repeated injections might be of service in checking the progress of the disease. As stated in THE NEWS of January 9, 1886, Lépine has reported favorably upon the use of intrapulmonary injections in pneumonia. It may be noted with satisfaction, that this procedure does not appear to be in the least degree dangerous, and no serious effects have been reported after the use of very varied substances, such as iodoform, creasote, carbolic acid, corrosive sublimate, and iodine. We cannot think that this plan has a very wide applicability, and except in cases of superficial cavities with stinking contents, its employment is of doubtful value.

By far the most hopeful outlook in pulmonary surgery is in the treatment of cases of abscess, gangrene, and hydatid by incision. The results hitherto obtained are most encouraging, particularly in hydatid disease, but in cases of abscess and gan-

grene, if favorably situated, free incision with drainage and disinfection, when performed early, before the patient is exhausted, may be expected to yield equally good results.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Thirty-seventh Annual Meeting, held at St. Louis, May 4, 5, 6, and 7, 1886.

(*By Telegraph.*)

(Specially reported for THE MEDICAL NEWS.)

TUESDAY, MAY 6.—FIRST DAY.

THE thirty-seventh Annual Session of the American Medical Association was called to order at 11 o'clock, in the Exposition Music Hall by Le Grand Atwood, M.D., Chairman of the Committee of Arrangements, the President, William Brodie, M.D., of Michigan, in the Chair. After a prayer by the Rev. Montgomery Schuyler, an *Address of Welcome* was made by the Hon. D. R. Francis, Mayor of St. Louis, in which he cordially welcomed the Association in behalf of the Municipal Government.

Dr. Le Grand Atwood, on behalf of the Committee of Arrangements, also extended a welcome.

The ex-Presidents of the Association, represented by Drs. N. S. Davis, J. M. Toner, T. G. Richardson, and D. W. Yandell, were then invited to seats on the platform.

The Committee of Arrangements then reported the programme.

PROTESTS AGAINST ADMISSION TO DELEGATES.

The Chairman of the Committee of Arrangements announced that he had received protests from the Philadelphia County Medical Society, the Davidson County (Tennessee) Medical Society, New York Academy of Medicine, Tri-State Medical Society, and the Mississippi Valley Medical Society. They were all referred to the Judicial Council.

DR. D. J. ROBERTS, of Tennessee, protested against the admission of all the delegates who had protested against the admission of the delegates from the Davidson County Medical Society.

Drs. Malcolm Johnson, of New York, Morrison, of St. Louis, W. H. Atchison and M. Kellogg, of New York, were made members by invitation.

DR. BRODIE then delivered

THE PRESIDENT'S ADDRESS.

He stated that no epidemic had visited our country during the year. The Association has lost some of its most honored members during this period, the most prominent of whom were W. K. Bowling, of Tennessee, John L. Atlee, of Pennsylvania, and Austin Flint, of New York, all ex-Presidents of the Association. A brief history of each was given, as well as an estimate of his character, professional labors, and contributions to science.

The organization of the Association was then reviewed from the original motion of Dr. Isaac Hays, at the National Convention in New York, in 1846, through the successive steps to the completion of the formation of the Association at the first meeting in Philadelphia in 1847. Upon this organization has arisen the most important medical association of this country. The resolution of Dr. Hays led to the formation of a harmonious organization of the medical profession of the entire country, and also to the adoption of a National Code of Ethics. Only four of the original pioneers of the Association are now living, of whom two have been honored with its presidency—Alfred Stillé and N. S. Davis. Twenty-two States and the District of Columbia were represented at the meeting held at Philadelphia in 1847, under the presidency of Dr. Nathaniel Chapman.

The most important subject of consideration at that meeting was the question of the advancement of the standard of medical education, and it was referred to the consideration of a special committee. The importance of State Licensing Boards, as now existing in Illinois, was recognized. Of all the State Medical Societies which have adopted the Code of Ethics, but one, that of New York, has repudiated it. To the honor of the profession of this State, be it written that the majority of the profession of the State have repudiated the action of this Society. Of the original committee which framed the Code of Ethics, only one member is now living—Dr. Alonzo Clark, of New York.

The character of the scientific work done by the Association, as shown by its *Transactions*, was then passed in review.

He recommended that the Association express its approval of the proposed investigation of the cause of yellow fever at the expense of the National Government. He recommended also the formation of a Section of Dermatology and Syphilis, and that the Secretaries of Sections be made permanent officers, subject to removal by the Sections. He stated that the *Journal* of the Association has thus far been successful, financially and otherwise. He denounced as derogatory the endorsement, in any manner, of proprietary medicines, and he held that practically there is no difference between patent and proprietary medicines, and that disgrace should rest upon the name of any man who allowed his name to be used in connection with the advertisement of proprietary preparations.

It has been suggested that the Association should form branches in different States, similar to those of the British Medical Association. He could see no advantage in the plan, but suggested its reference to a special committee, to report next year.

The organization of the International Medical Congress, he stated, was now being completed, and that the report of the Committee on Organization would be found satisfactory. The Committee had relieved the Association from any responsibility in connection with the Congress. He then passed in review the formation of the original Committee in Washington in 1884, and the subsequent action at New Orleans. The work which the original Committee had done was unsatisfactory; two courses were then open to the Association in 1885: either to discharge the Committee or to enlarge it. The latter course was pursued, and the right of the Association to take this action was indicated by the fact that the original Committee had reported back to the Association. He cordially agreed with the sentiment of the medical profession, that the report of the present Committee be adopted, and that the disappointed members

of the profession should rise above personal interests in the expression of their feeling of national hospitality.

Matters of importance may come before the Association in this meeting; matters which may involve the honor of the profession. Thirty-nine years of existence entitle the Association to the support of the profession, and he asked that careful consideration be given to any and all movements which may arise to jeopardize it. Let it be said, that with foes within and foes without, the Association still stands as the representative of the American profession.

DR. J. H. MURPHY, of St. Paul, moved that the Association tender its thanks to the President for his address, and that its recommendations be referred to a special committee.

REPORT OF THE COMMITTEE ON ORGANIZATION OF THE CONGRESS.

DR. J. S. LYNCH, of Baltimore, reported that the Committee on Preliminary Organization of the International Medical Congress, in accordance with the instructions of the Association, had adopted, after mature deliberation, the necessary rules for the organization of the Congress, had nominated officers, and a local Committee of Arrangements in Washington, with power to increase its members. In accordance with Rule X. of the published Rules for the Organization of the Congress, they had elected a full list of officers.

DR. J. M. TONER, of Washington, interrupted the reading of the report by a motion that the report be adopted. The motion was at once seconded and carried without debate.

A motion to reconsider was then made, and, on motion, was laid upon the table.

NOMINATION OF OFFICERS FOR SECTIONS.

DR. N. S. DAVIS, of Illinois, moved to amend the amendment of Dr. Foster Pratt, of Michigan, offered in 1884, so that the following should be substituted for Section II., Paragraph III. of the By-laws:

On the second day of each annual session, each Section shall nominate its own officers to serve for the next ensuing year, their duties to commence at the close of the annual meeting at which they were nominated, and to continue until their successors are elected.

Dr. Davis stated that the chief argument in favor of this amendment lay in the inability of the Nominating Committee to know the qualifications of the various candidates for the large number of offices to be filled in the various Sections.

DR. D. J. ROBERTS, of Tennessee, moved to amend by requiring the Sections to make the nominations on the first day, at three P. M., meridian time; but he subsequently modified his motion to the second day, at the same time.

DR. E. SMITH, of Michigan, moved to lay the motion on the table. Lost.

DR. W. T. BISHOP, of Harrisburg, moved postponement of further consideration of the subject until the Committee had reported on the recommendations contained in the President's Address. Lost.

DR. I. N. QUIMBY, of New Jersey, raised the point of order that the Committee had nothing to do with the question.

DR. A. L. GIHON, U. S. N., moved an amendment that the secretaries thus elected be permanent secretaries.

DR. N. S. DAVIS, of Illinois, stated that good secretaries would undoubtedly be retained without such a by-law.

DR. GIHON then withdrew his amendment.

DR. R. A. KINLOCH, of South Carolina, remarked that a member voting with a Section identified himself with that Section, and he inquired whether he would not thereby be excluded from work in other Sections. He thought the amendment, in effect, divided the Association into separate organizations.

DR. E. SMITH, of Michigan, objected to the amendment on the ground that an election would involve too much political work.

DR. D. S. REYNOLDS, of Kentucky, stated that an amendment adopted at the New York meeting prohibited the election to office of members who were not present. This system excluded the election of good men. He thought the amendment was unnecessary, as the Committee on Nominations is instructed to nominate only competent men.

DR. N. S. DAVIS explained that the amendment proposed concerned only the nomination of officers; the election was done by the Association.

DR. J. H. MURPHY, of Minnesota, desired to see the amendment defeated, because the city men would have an advantage over the country men, and the Eastern men would crowd out the Western.

DR. J. B. MURDOCH, of Pittsburg, thought that the amendment would lead to too much wire-pulling and log-rolling.

DR. W. W. ALLPORT, of Chicago, narrated a case in point occurring in connection with a delegation from a Chicago Medical Society.

The question was loudly called for, and the amendment, on being put to a vote, was carried.

A number of papers were referred to the several Sections, after which the Session adjourned.

WEDNESDAY, MAY 5.—SECOND DAY.

The Committee of Arrangements moved that Dr. J. A. Thacker, of Cincinnati, be made a member by invitation. Carried.

THE COMMITTEE ON PRESIDENT'S ADDRESS

was appointed as follows: Drs. J. H. Murphy, of St. Paul; A. L. Gihon, U. S. Navy; and Alonzo A. Garcelon, of Maine.

THE NOMINATING COMMITTEE

was constituted as follows:

Alabama.—
Arkansas.—W. O. Hooper.
California.—
Colorado.—J. W. Graham.
Connecticut.—W. C. Wile.
Dakota.—J. B. Van Velsor.
Delaware.—
District of Columbia.—J. W. Bulkley.
Florida.—T. O. Summers.
Georgia.—J. W. Bailey.
Illinois.—J. E. Owens.
Indiana.—T. B. Harvey.
Iowa.—William Watson.
Kansas.—C. V. Mottram.

Kentucky.—W. H. Wathen.
Louisiana.—Joseph Jones.
Maine.—C. E. Webster.
Maryland.—G. H. Rohé.
Massachusetts.—E. W. Cushing.
Michigan.—H. O. Walker.
Minnesota.—H. H. Kimball.
Mississippi.—P. W. Rowland.
Missouri.—G. W. Dudley.
Nebraska.—William Knapp.
New Hampshire.—
New Jersey.—E. L. B. Godfrey.
New Mexico.—W. R. Tipton.
New York.—E. S. F. Arnold.
North Carolina.—C. J. O'Hagan.
Ohio.—H. J. Sharp.
Oregon.—
Pennsylvania.—C. J. Lange.
Rhode Island.—H. R. Storer.
South Carolina.—R. A. Kinloch.
Tennessee.—Duncan Eve.
Texas.—J. F. Y. Paine.
Vermont.—A. T. Woodward.
Virginia.—G. B. McCorkle.
West Virginia.—G. Baird.
Wisconsin.—W. T. Galloway.
U. S. Army.—
U. S. Navy.—W. T. Howard.
U. S. Marine-Hospital Service.—Dr. W. W. Wyman.

DR. G. C. SAVAGE made a protest against the appointment of Dr. Duncan Eve, of Tennessee, and it was referred to the Judicial Council.

DR. N. SENN, of Wisconsin, then delivered the

ADDRESS IN SURGERY.

(See page 505.)

Dr. Henry F. Campbell, of Georgia, Ex-President of the Association, was invited to a seat on the platform.

DR. S. C. GORDON, of Maine, delivered the

ADDRESS IN OBSTETRICS.

He said that the year just passed had yielded no remarkable discoveries in either obstetrics or gynecology. He, therefore, confined his remarks to subjects which had been discussed in the journals during that time, and considered them in the light of experience. Old theories in medical science are being constantly exploded, and of this a good example was presented at the last meeting of the Association. It had long been held that a physician who was attending a case of scarlatina was unfitted for duty as an accoucheur; but Dr. George F. French, of Minnesota, showed then the fallacy of this view and the power of disinfectants.

He next discussed the early signs of pregnancy, and stated that he had found the test proposed by Hégar valuable, and applicable at an early date. Campbell's method of relieving the vomiting of pregnancy by postural pneumatic reduction, was approved. For induction of premature labor, he prefers retention of the sound to rapid dilatation. Anæsthesia and the forceps have done much to relieve the suffering and prevent the dangers of the parturient state; and under the judicious use of the forceps, vesico-vaginal fistula is becoming infrequent.

DR. A. L. GIHON, U. S. N., reported that the

COMMITTEE ON THE RUSH MONUMENT

had organized by the election of Dr. G. H. Rohé, of Maryland as Secretary, and Dr. J. M. Toner, of Washington, as Treasurer; that a local committee had been appointed, and also a general committee of one from each State.

DR. I. N. QUIMBY, of New Jersey, Chairman of the committee appointed last year to consider the propriety of the formation of a

NEW SECTION OF MEDICAL JURISPRUDENCE,

reported favorably thereon, and moved the adoption of the amendment proposed.

DR. SAMUEL LOGAN, of Louisiana, opposed the amendment as unnecessary, as the work coming before such a Section could equally well go before the Section on State Medicine.

DR. HENRY F. CAMPBELL, of Georgia, strongly urged the adoption of the amendment, and stated his belief that it would strengthen the profession against legal intrigue.

The amendment was adopted, and the session adjourned.

THURSDAY, MAY 6.—THIRD DAY.

The Session was opened by prayer, after which the Committee of Arrangements reported a list of receptions to the members which would be given in the evening.

The Special Committee appointed to consider the

RECOMMENDATIONS CONTAINED IN THE PRESIDENT'S ADDRESS

reported: *First.* That in the opinion of the Committee it was proper and desirable for this Association, without delay, to memorialize Congress in behalf of the pending resolution to appoint a scientific commission consisting of three members of the medical profession, to visit the habitats of yellow fever, with the view of determining the validity of the claims of Drs. Carmona and Freire, to have discovered the means of preventing or modifying the attacks of the disease.

Second. The Committee did not approve of the suggested recession from the recommendation of the use of the metric system.

Third. That it heartily approves the suggestion of the President that the Association, having created a Section of Medical Jurisprudence, shall further establish a Section of Dermatology and Syphilis.

Fourth. It concurs with the President as to the wisdom of the provision that the several Sections shall elect their own officers from men of recognized authority and experience in special Section work; and, further, in its opinion the efficiency of the Sections will be enhanced by a continuance from year to year of the secretaries of said Sections.

Fifth. It endorses the views expressed by the President respecting the *Journal of the Association* and of the exclusive proprietary interest of this Association in the papers and reports made as part of the transactions.

Sixth. The Association should emphatically denounce the endorsement by certificate, advertisement, testimonial, or indirect approval of any form of proprietary

remedies and appliances, and should instruct the Judicial Council to take action in all such cases without formal presentation of charges. That, in the words of the President, "The stigma of professional disgrace rests upon any regularly educated physician who allows his name to be advertised as endorser of any patent, secret, or proprietary medicine."

Seventh. That it is desirable that the Association appoint a committee at this meeting to consider the advisability of amending the organic law of the Association by the establishment of branches, and report thereon at the next annual meeting.

Eighth. It earnestly reëchoes the wish of the President that the members of the profession cordially cooperate in the effort to make the American Session of the International Medical Congress creditable to the country and attractive and instructive to the foreign members—sacrificing personal and private piques and disappointments in generous emulation to contribute to that success which has been unconditionally pledged in the invitation tendered to the foreign members of the Congress to meet in the United States.

A motion was then made to adopt the report.

DR. J. F. HIBBERD, of Indiana, inquired whether the adoption of the report implied an endorsement of all the statements it contained? If so, he objected to the recommendation to add another Section; the Association had too many heads now. It was impossible to secure a good attendance upon the Section of State Medicine. Jurisprudence should be added to the title of this Section, with a view to increase the interest in it.

DR. J. B. MURDOCH, of Pittsburg, thought that other provisions were objectionable. He moved the consideration of the report in sections, each resolution separately.

DR. W. T. BISHOP, of Pennsylvania, moved the postponement of action to the first order under the head of new business.

DR. I. N. QUIMBY, of Jersey City, raised the point of order that there was a motion already before the house.

DR. EUGENE SMITH, of Michigan, moved the previous question, which was carried.

DR. SAMUEL LOGAN, of Louisiana, the Acting President, decided that Dr. Murdoch's motion was the previous question. This led to a spirited discussion, and finally the motion of Dr. Murdoch was put to a vote and carried.

The original motion was then put and carried.

DR. EDWARD JACKSON, of Pennsylvania, then called for the

REPORT OF THE JUDICIAL COUNCIL REGARDING THE PROTEST

against the admission of the delegates from the Philadelphia County Medical Society.

The Chair stated that the matter was in the hands of the Council, who would present their report at the proper time.

DR. JOHN B. ROBERTS, of Pennsylvania, stated that the report of the Council in reference to this matter had been placed in the Secretary's hands yesterday, and he asked why it had not been read.

THE PRESIDENT ruled that the question was out of order.

The report of the Standing Committee on

METEOROLOGICAL CONDITIONS,

and their Relations to the Prevalence of Disease, also concerning the Collective Investigation of Disease in Coöperation with the British Medical Association, was presented by Dr. N. S. Davis, of Illinois. He stated that the progress of the work had been aided by the U. S. Signal Service, and that sufficient material had accumulated to present an elaborate report, but that it was deemed best to withhold it until the progress of the cholera epidemic in Europe was better known. The report was adopted.

THE COMMITTEE ON NOMINATIONS

presented the following report of nominations for officers for the ensuing year.

President.—E. H. Gregory, M.D., of St. Louis.

Vice-Presidents.—Drs. B. H. Miller, of Stillwater, Michigan; W. B. Welch, of Fayetteville, Arkansas; Wm. H. Pancoast, of Philadelphia; W. C. Wile, of Sandy Hook, Connecticut.

Permanent Secretary.—W. B. Atkinson, M.D., of Philadelphia.

Assistant Secretary.—J. Nevins Hyde, M.D., of Chicago.

Treasurer.—R. J. Dunglison, M.D., of Philadelphia.

Librarian.—C. H. A. Kleinschmidt, M.D., of Washington, D. C.

Section of Practice of Medicine.—Drs. J. S. Lynch, of Baltimore, Chairman; J. B. Marvin, of Kentucky, Secretary.

Section of Surgery.—Drs. H. H. Mudd, of St. Louis, Chairman; J. B. Roberts, of Philadelphia, Secretary.

Section of Obstetrics.—Drs. S. M. Johnson, of Kansas, Chairman; W. W. Jaggard, of Illinois, Secretary.

Section of Oral and Dental Surgery.—Drs. J S. Marshall, of Chicago, Chairman; E. S. Talbott, of Chicago, Secretary.

Committee on Necrology.—J. M. Toner, M.D., of Washington, Chairman.

Judicial Council.—Drs. N. S. Davis, of Illinois; Hawkins Brown, of Kentucky; William Brodie, of Michigan; D. J. Roberts, of Tennessee; R. C. Moore, of Nebraska; T. A. Foster, of Maine; James A. Gray, of Georgia.

Trustees of Journal.—Drs. P. O. Hooper, of Arkansas; A. Garcelon, of Maine; L. S. McMurtry, of Kentucky.

Time and Place of Next Meeting.—Chicago, first Tuesday in June, 1887.

Chairman of Committee of Arrangements.—Charles Gilman Smith, M.D., of Chicago.

The report was unanimously adopted.

DR. J. M. KELLER, of Arkansas, Chairman, presented the report of the Special Committee on

CREMATION.

He reviewed the work of the Committee from its organization to the present date. The subject had excited considerable public and professional attention. So many articles have appeared on the subject that the Committee has deemed it necessary to make only one or two additional statements. It believes that the horrid earth burial does more to propagate disease than any other custom.

A motion was made to adopt the report.

A motion to lay the report on the table was made and lost, and the original motion to adopt was carried by a vote o 159 to 106.

DR. THAD. A. REAMY, of Cincinnati, moved a reconsideration of this motion, giving as a reason his unwillingness to adopt or endorse a report which denominated theancient and sacred rite of burial as a horrid custom. He further opposed the statement that organisms which result from the putrefaction of the body are necessarily pathogenic, as contrary to scientific fact.

The motion to reconsider was adopted by a vote of 198 to 25.

DR. JOHN MORRIS, of Baltimore, moved the reference of the report to the Section on State Medicine. Adopted.

THE JUDICIAL COUNCIL AND THE PHILADELPHIA DELEGATES.

DR. JOHN B. ROBERTS, of Philadelphia, moved that the Secretary be instructed to explain to the Association why the report of the Judicial Council which had been handed to him yesterday had not been read?

THE PRESIDENT ruled the motion out of order.

DR. EDWARD JACKSON, of Pennsylvania, appealed from the decision of the Chair.

DR. SAMUEL LOGAN, of Louisiana, moved that the decision of the Chair be sustained. Adopted.

DR. J. M. TONER, of Washington, presented a resolution that the Association return to the Judicial Council its report concerning the protest against the admission of the delegation from the Philadelphia County Medical Society. Adopted.

DR. TONER then requested that the witnesses in the case report immediately in the room of the Judicial Council.

DR. J. T. WHITTAKER, of Cincinnati, then delivered the

ADDRESS IN MEDICINE,

which will appear in the next issue of THE MEDICAL NEWS.

DR. JOHN H. RAUCH, of Illinois, then delivered the

ADDRESS IN STATE MEDICINE.

He first reviewed the definitions which have been given of state medicine, beginning with that of Dunglison. Parkes, in his *Manual of Practical Hygiene*, defines it to be the relation of the State to purely sanitary matters. Chaumont widens this definition and includes questions of public health and hygiene, general, special, and individual. The distinction between preventive and curative medicine he held to be artificial and unnecessary, and he agreed with Richardson that preventive medicine is not a science separated properly from so-called curative medicine. In addressing this Association, in Atlanta, in 1879, Dr. Homer A. Johnson, of Illinois, said that it is the duty of the State to protect its citizens from the injuries which they may sustain from the practice of incompetent physicians and surgeons as well as from any other source of danger to the public health. State medicine, therefore, should be defined as the connection of the State with that branch of science which relates to the prevention, cure, and alleviation of the diseases of the human body. Therefore, his report of the discoveries and advances during the past year should logically begin with the subject of the regulation of medical practice, which also necessarily includes the subject of medical education. Before discussing the existing statutes, he reviewed the authority of the State to control medical practice. He held that it was inherent and plenary, and he reviewed the history of the various attempts in the different States to exercise control over medical practice down to the passage of the Medical Practice Act in the State of Illinois, an example which has since been followed several States. The general tendency of legislation is toward securing a generally recognized standard of professional attainment. He stated that there had been a notable advance in the standard of medical education since the enactment of these laws. Of one hundred and twenty existing colleges in the United States, ninety-three had enacted educational requirements, as shown in a preliminary examination before matriculation. A low standard of education and absence of uniform legal requirements are responsible almost exclusively for overcrowding in the profession. He stated that over seven per cent. of the entire number of physicians graduating fail to make a competence by their profession and seek other methods of livelihood. He had followed with care the career of 789 out of 1000 physicians who had studied four years and attended three courses of lectures before graduation. These are, with few exceptions, the successful and prominent members of the profession in the localities where they reside.

The foregoing considerations lead logically to the following conclusions:

1. That the best interests of the public welfare demand the highest attainable standard of educational qualifications, skill, ability, high professional and personal honor, integrity, and morality.

2. That it is the duty of the State to exercise the inherent plenary power and authority which it possesses for the protection and promotion of the public welfare, to secure such a standard.

3. Uniform State laws, exacting of every aspirant to the practice of medicine proof of his professional fitness.

Competency would prove the most potent agency in improving the standard of medical education and in enhancing the dignity and usefulness of the profession. He suggested specifically that the Association put itself on record at this session by recommending the extension of the period of study to four years, and the attendance upon lectures to three full terms, with ample hospital and clinical instruction. Also, that the Committee on State Medicine be instructed to frame regulations for the practice of medicine, which should be endorsed by the Association, as the standard to which all existing legislation should be made to conform as speedily as practicable, and which should be urged for adoption upon all the States where no such laws already exist.

The number of sanitary organizations, legal and voluntary, have greatly increased, contributions to sanitary literature are numerous and valuable, and professional and public interest has been elicited as it has never been before.

Stimulated by the presence of cholera in southern and western Europe, four State Boards of Health have been established during the year.

From personal inspection of the quarantine regulations along the Atlantic coast, the St. Lawrence, the Gulf, and the Rio Grande, Dr. Rauch concluded that cholera, smallpox, and yellow fever may be excluded

from the United States by intelligent use of the agencies still at our command. He spoke with earnestness of the necessity of national control over immigration, as the question is becoming daily, hourly more urgent. How much longer, he asked, will it be safe or prudent to permit the unrestricted influx of the vicious, insane, pauper, and infected immigrants into our midst?

He closed his address with a quotation from a paper on the relations of smallpox to vaccination from the fifth annual report of the State Board of Health of Illinois, showing the advantages of humanized virus over bovine regarding promptness and certainty of action, particularly in cases of emergency.

AN ENTERTAINMENT FUND FOR THE CONGRESS.

DR. A. Y. P. GARNETT, of Washington, D. C., moved that the delegates to the Association be requested, on their return home, to adopt such measures as may to them seem best to call the attention of their respective members of Congress to the necessity of making an appropriation to assist the medical profession in properly receiving and entertaining the International Medical Congress in Washington, in 1887. Adopted.

THE TREASURER'S REPORT

was then read. It pointed out the increased proportion of annual dues now collected, which, in his opinion, was due to the publication of a journal instead of an annual volume of transactions. Formerly only fifty per cent. of the members paid their dues; now, those not paying regularly are conspicuous by their paucity. The balance in the treasury was $378.29. No detailed statement of the finances was given.

THE LIBRARIAN'S REPORT

stated that 232 distinct titles had been added in addition to various reports, making 100 per cent. increase over the average of former years.

DR. A. L. GIHON, U. S. N., offered an

AMENDMENT TO THE BY-LAWS,

establishing a Section on Dermatology and Syphilis.

DR. GIHON moved that a committee of nine be appointed, including the President, the President-elect, and the four Vice-Presidents-elect, to consider the advisability of

MODIFYING THE ORGANIC LAW

of the Association so as to authorize the formation of branches, and to report at the next meeting. Adopted.

Adjourned.

(To be concluded.)

AMERICAN SURGICAL ASSOCIATION.

Seventh Annual Session, held at Washington, D. C., April 28, 29, and 30, and May 1, 1886.

(Specially reported for THE MEDICAL NEWS.)

FIRST DAY, APRIL 28.—MORNING SESSION.

THE Association was called to order at 11 A. M., in the Library of the Army Medical Museum by THE PRESIDENT, MOSES GUNN, M.D., of Chicago.

The reading of the minutes of the previous meeting was dispensed with, as the entire record of proceedings had been published in the volume of *Transactions*.

THE PRESIDENT then delivered his

ANNUAL ADDRESS.

(See page 511.)

AFTERNOON SESSION.

Immediately after the call to order, THE PRESIDENT appointed the

COMMITTEE ON NOMINATIONS,

consisting of Drs. J. C. Hutchison, C. T. Parkes, W. H. Pancoast, N. Dandridge, and N. Senn.

DR. CHRISTOPHER JOHNSON, of Baltimore, then read a paper on

DIAGNOSTITIAL LAPAROTOMY.

The rapid advance of modern surgery calls for an expression of opinion with regard to explorative laparotomy, as well as for the purpose of arriving at certain laws limiting the performance of the operation under certain circumstances. Whatever the character of the growth or condition which calls for treatment in the province of surgery, there would still remain a question as to the best method of reaching the seat of the difficulty. The bladder yields up its contained tumor or calculus through an incision in the perineum, or, it may be, by a cholecystotomy, without incision of the peritoneum; but how is the abdominal cavity to be reached? The answer is, by laparotomy. The point to be determined is, whether the operation is not, in many cases, rather a duty than a matter of election? If the surgeon has no right to refuse relief to a patient suffering from obstruction of the respiratory passages, has he a right to refuse to give relief when the *prima viæ* are suffering from obstruction? The bold surgeon must establish the precedent, or surgery would be at a standstill. Modern antiseptic practice, headed by Listerism, takes its place by the side of anæsthesia, rendering many cases possible which were formerly impossible. The mortality of incised wounds of the abdomen, without visceral lesion, is low; so, also, is the surgeon's diagnostitial laparotomy.

Of the 94 diagnostitial laparotomies reported by Lawson Tait out of his total 100 cases, but 2 died. Cases have since been reported in which an examination lasted as long as a hour, and yet recovery occurred without untoward symptoms. A great deal depends upon the time at which the operation is undertaken. Mr. Graves says that laparotomy is not in itself a severe undertaking; its high mortality depends upon the fact that it is usually undertaken too late. "It is regarded as a last resort, whereas it should be the first as it is the only resource."

Many objections to laparotomy have been raised. It is objected that an acute invagination may become chronic; but while this is true, it is also true that most cases do not live long enough to do so. The laparotomy in these cases resolves itself into an exploratory incision which adds little to the risks of the patient. As Mr. Graves thinks, it adds little to the mortality of the operation. It may be considered a proper aid to surgical diagnosis.

The fourth conclusion of Dr. Dennis, in his recent article in THE MEDICAL NEWS, is of interest in this connection. It is that laparotomy adds no danger to the patient, if performed under the strictest antiseptic precautions. There are several different kinds of lapa-

rotomy, determined by the object for which it is performed. Those cases in which it is performed for the removal of the uterus or some of its appendages, including cases in which it is performed for the removal of a fœtus, fill the greater part of the field.

The speaker expressed the fear that all cases of laparotomy for intestinal obstruction are not placed on record. Our faith in statistics is increased when we see the skilled operators in gynecology rating their recoveries higher and higher each year. It is difficult to hesitate now as to what shall be done in cases demanding immediate and prompt relief. The good surgeons and true should seize upon and crush out the causes of death which lurk secure behind the abdominal wall. Mr. Tait is quoted as having directed to cut the patient open and turn the evil material out. The late Dr. Gross once said, "I never know exactly what I am to find until I get into the abdominal cavity." When we compare the great mortality attending the ancient Cæsarean section as compared with the low mortality of the modern Porro-Müller operation, we are impressed by the contrast. Much of the difference depended doubtless upon the crude methods which were then practised as compared with the antiseptic methods of the present, aided also by the use of anæsthesia. The old abdominal incision was as innocent when done in the old way as it is now when it is done for the extirpation of the uterus and annexes. If the Porro-Müller operation does not swell the mortality, it is due to antisepsis and anæsthesia, as well as perhaps to modern methods of surgery.

Hitherto we have taken the ground that exploratory laparotomy is a thing proper to be done under certain circumstances; now we take a higher ground, and say that it becomes the bounden duty of the surgeon, under certain circumstances which demand its performance as imperatively as though it were the practice of a certain principle.

In conclusion, Dr. Johnson discussed at some length the indications for exploratory laparotomy, not confining these to the most obscure affections, but showing by illustration that many apparently simple conditions may be so obscure as to be confounded with others which render an exploratory incision highly desirable if not imperative. Apart from the fact that many, if not most laparotomies are confirmatory or diagnostitial, he would establish two great groups of cases calling for laparotomy:

1. All cases in which the diagnosis cannot be made without its aid.

2. All those cases in which a diagnosis having been made, no definite line of operation can be marked out, and no abandonment of active measures be entertained or justified.

Finally, under every circumstance, the diagnosis ought to be determined.

With regard to the time of the operation, he repeated, in conclusion, that it cannot be made too early, and that it is a decided fact that in most cases the fatal result is largely due to the delay which has preceded its execution.

DR. A. VANDERVEER, in opening the discussion, remarked that it is an admitted fact that many operations within the abdomen that a few years ago were considered impossible, now, by the aid of antisepsis, are made successful. And yet it is true that the operation of abdominal section for the relief of such conditions as acute peritonitis, salpingitis, and acute intestinal obstruction has, as yet, received but slight endorsement from a great many of the profession, and but little, if any, encouragement from the public. We stand, with reference to the operation, as we did with reference to ovariotomy twenty-five years ago—a few brilliant results, but many failures and many points yet to be discussed and settled in the minds of surgeons. It is true that Parkes, Bull, Dennis, Fowler, and others have done splendid work, and have been rewarded by seeing some of their cases recover; yet to-day it is an operation gaining a foothold slowly. If we consider the subject of intestinal obstruction, we must admit that it is by no means of infrequent occurrence, and that the record, as well as in wounds of the abdomen and contents, is almost invariably fatal. We know well from our pathological studies that certain lesions occur in which it is impossible for medical treatment to be of any avail. One is inclined to take his own experience and use it in the desperate cases that present, and insist upon it that the unfortunate patients be given the benefit of what may seem to them a very severe and dangerous operation.

In a paper presented to the Medical Society of the State of New York, in February, entitled "A Report of Cases of Perityphlitic Abscess," the speaker made the suggestion that in acute cases of perforation of the appendix an abdominal section be made, the contents of the peritoneal cavity washed out, and such repair brought about as was possible. Yet up to this day little progress has been made in any way in treating such cases. At the present time there is a great difference of opinion among surgeons as to the treatment of intestinal obstruction. It is necessary that as careful and correct a diagnosis as possible be made in these cases. If impacted feces, if foreign bodies, if intussusception within or tumors pressing without be the cause, a line of medical treatment can be tried; but when thoroughly done, it ought not to be said that nothing more can be offered in the way of operative interference. Mr. Jonathan Hutchinson, of London, is one of the number who believe in what he terms abdominal taxis, under an anæsthetic, and is opposed to early interference. At the same time with his abdominal taxis he uses large enemata and laxative medicines. If these means do not succeed, he waits and keeps the patient on a low diet, and gives opium and belladonna internally, and subsequently repeats the abdominal taxis. He favors laparotomy as a last and most desperate resort.

Mr. Frederick Treves, and many others, take the opposite side of the question, considering the conditions which produce acute obstruction for the most part of a necessarily fatal character, unless speedily relieved. They do not waste time in what they regard as useless, if not injurious, manipulations, and proceed to open the belly as soon as assured that the case is one of serious obstruction, and not one of obstinate constipation.

It seemed to him important for us to consider what is the proper time for operating in these cases of intestinal obstruction. We should be cautious not to delay too long. As to wounds of the contents of the abdomen, a line of treatment is, perhaps, becoming more estab-

lished, and that is, an early operation for closing the opening in the intestinal wall, to control hemorrhage, and to wash out the abdominal cavity and free it of whatever foreign substance has found a lodgement there.

Operations upon the gall-bladder, the spleen, pancreas, the liver, the kidneys, and mesentery, are slowly, hesitatingly, but surely gaining ground. As to the surroundings of these patients, it is unquestionably better that they be taken to a quiet, well-regulated hospital where cleanliness, experienced nursing, and other advantages may be had. Where this is not possible the best sanitary measures should be adopted, and every attempt at antiseptic precautions made. As to the method of making the abdominal section, he recommended the section in the median line. When the section has been made and the intestines roll out, as they often do, distended with gas, he advised the incision of the most prominent loop for the purpose of permitting the escape of gas and other contents, after which it would, as a rule, be found an easy matter to find the wound and stitch it. Reference was further made to the method of opening the stomach and forcibly dilating the pylorus, as one of the most brilliant advances of modern surgery.

With reference to the closure of the abdominal wound, he believed the method of Sir Spencer Wells, by means of deep through and through suture, the best. He had little hopes of the method suggested by some at the present time, of bringing together first the peritoneum and then the muscular layers and skin separately. Probably there is no better external dressing than the simple Gamgee pad and adhesive plaster.

DR. J. EWING MEARS preferred to arrange the subject into: 1. External examination as a means of diagnosis; 2. Internal examination where it is possible to be made through the exploration of the pelvic cavity; 3. Aspiration; 4. Laparotomy. Laparotomy is thus placed last, to be resorted to only after all other methods have been employed, because he regarded it as the most serious method of examination that can be made.

We have to discuss, he continued, first the proposition which Dr. Johnson first laid down: "All cases in which the diagnosis cannot be made without its aid." We have nothing to do with laparotomy as a method of treatment. He did not hesitate to open the abdomen when it is necessary, and yet the more experience he has, the more he is led to believe that the abdominal cavity should not be opened without due consideration and hesitation. Death is a very severe penalty to pay for the perfection of a diagnosis, and that has been paid a great many times. It seemed to him that, in the investigation of the condition of the organs of the abdomen, we must not go too hastily, or resort to laparotomy too soon. We should study rather to be able to recognize the condition within without its aid, and learn to make a diagnosis by means of the fingers aiding what we can see. There is danger that we will be led to make the operation too hastily simply because Mr. Tait has said that it is one of little consequence. Mr. Tait states that it is necessary to make only a small incision, large enough to admit one finger, or, possibly, two. The speaker had, however, found it impossible in several cases to determine the underlying condition until the wound had been enlarged sufficiently to admit several fingers or the whole hand.

There are many conditions, he admitted, in which we are unable to make the diagnosis without the operation, and he fully agreed with Dr. Johnson, that the operation should be performed in all cases where the life of the patient depended upon it.

In conclusion, he stated that he believed the condition of the peritoneum had much do do with the danger or immunity with which the cavity is opened at different times. It is a fact, that at times a very slight injury to the healthy peritoneum will terminate in death, while at others an extensive wounding of a peritoneum which has been long subjected to the presence of a tumor will in no way retard the recovery of the patient.

DR. C. T. PARKE remarked that the tenor of the paper had been such as to establish the point that all other resources should be exhausted before laparotomy should be resorted to, whatever be the condition for which section is made. He had been impressed by a reference in the paper to the length of the abdominal incision. In his opinion, this had little if any influence on the result of the operation; he had, however, observed that in cases in which he had been required to prolong his incision above the umbilicus, if they recovered, they passed through a somewhat longer period of convalescence. There has, further, always been some trouble with the stitches. With regard to the mortality attending incisions of the abdomen, so far as his experience went, he could not say that incisions made for exploratory purposes have had anything to do with the mortality. In every case in which a post-mortem examination followed the operation, nothing had been found in the abdominal incision, whether short or long, which could have had anything to do with the cause of death. He then reported a case which had proved very instructive to him, with regard to the danger of opening the abdomen. A woman had been hooked by a cow, the abdomen ripped open, the bowels protruding. These were cleansed, returned, the wound closed, and recovery promptly followed, without even a circumscribed peritonitis. If cases of this sort will get well, the surgeon ought not to hesitate to persist with his incisions. With reference to the method of Mr. Hutchinson, of London, for the relief of intestinal obstruction, he narrated a case in which the patient had been put through the treatment until too late for further methods, and death ensued. The cause of the obstruction was found to have been a firm band of adhesions, which it required considerable force to release.

He fully concurred in the opinion that, after all other methods of relief have been employed, it is the bounden duty of the surgeon to resort to section for the purpose of determining the cause of the difficulty.

In penetrating wounds of the abdomen, external manipulation or examination without incision does no good. In these cases there is no alternative but to open the abdominal wall in the median line. There is no place where the opening can be made so easily and where the organs can be so well examined as in the median line.

He was strongly opposed to the practice of closing the abdominal incision by separate sutures. It is not right to keep the patient under anæsthesia long enough for this purpose.

With reference to the possibility of differing results depending upon a different condition of the peritoneum,

as referred to by Dr. Mears, he thought the different results depended rather upon differences in the pedicle. For example, in ovarian tumors (in which the peritoneum has become subject to pressure) the pedicle is small as compared with that of uterine tumors, in which the peritoneum is practically healthy.

DR. L. MCLANE TIFFANY remarked that the term laparotomy does not imply simply an incision of the abdominal walls. Laparotomy is undertaken when the patient is ill, when practically the condition of the patient is desperate; the powers of life are depressed, and in addition to that depression there is added, not the incision of the abdominal cavity only, but the opening of the largest serous cavity of the body, the inspection of its contents, and, in addition to that, in a number of cases, some surgical procedure, after which the toilet of the peritoneum is done. The term should be made to include all these various manipulations. The patients are frequently met in a state of profound coma from which they do not arouse. This is especially the case in intestinal obstruction. He had seen four of these cases since the last meeting. In two the operation of laparotomy was declined; in two it was accepted, and in one successful. One of these (fatal) was a woman, seventy years old, with an obstruction lasting seven days. The obstruction was found to be a peritoneal band at the splenic flexure of the colon. The abdomen was enormously distended when first opened. The intestine gave way, permitting the escape of gas and collapse of the walls. It was only after this had occurred that the actual condition of obstruction could be detected. He realized fully what had been said of the importance of permitting such an escape of gas.

There is, however, a condition which calls for laparotomy in which the operation is useless. A case of this kind was then reported. A woman had suffered from an intestinal obstruction for eight days. Injections were administered until the patient claimed that she could taste the suds, but no evacuation was obtained. The autopsy revealed a loop of intestine of about eight inches in length, of a livid red color, firm and inelastic, totally unlike a normal intestine. The speaker concluded that the hyperæmic condition which was here present was much the same in character as the engorgement of lung tissue which was formerly called pulmonary apoplexy; and that it was a paralytic condition of the portion of the intestine at that point.

In the majority of cases of pistol-ball wounds met in so-called civil practice, where a small ball is used, it is impossible to judge whether or not injury has been done to the intestine. In such cases it is difficult to determine what should be done. Opening the abdomen is not usually attended by much harm, but it is an operation which is capable of much harm at times.

DR. J. FORD THOMPSON stated that he desired to report two cases, of interest in connection with this subject. The patient had suffered several years from a tumor resembling in many particulars an ovarian tumor; but there were two sinuses leading from it and opening in the groin, one passing to the right and the other to the left. The abdominal enlargement was as great as that at the fifth or six month of gestation. He concluded to operate by following the sinuses. The right sinus was chosen, and was followed for some distance in the abdominal wall before it entered the cavity. When the cavity was opened a large tumor presented, but there was no explanation of the flow of pus. He, therefore, introduced his hand and passed it up around the tumor without difficulty. The tumor was found firmly attached to the abdominal wall toward its upper portion, and as it was concluded that it was an inflammatory condition of that wall, it was decided to close the wound without further exploration. The patient recovered from the operation, but died five months after. The autopsy then revealed a condition which had never been suspected, and one which he had never before seen. The enlargement was simply the spleen, which had fallen down behind the pubic bone. It was enormously enlarged and had become perfectly adherent to the abdominal walls except at the two points at which the sinuses obtained exit.

The other case was one of a small tumor in the right hypochondriac region, easily movable, painful upon motion, or upon pressure from without. An incision was made to about three inches above the umbilicus, in the median line. The tumor was seized and brought to view. It was, as he concluded, a carcinoma of the mesentery, probably involving the transverse colon, as that portion of the intestine was found running through the tumor. It invaded also the liver, the attachment to that organ being fully two inches in diameter. Beyond the encroachment of the disease the liver appeared to be perfectly healthy. The operation could not be completed, and the wound was closed. The woman recovered without difficulty from the operation.

With reference to the methods of suturing the abdomen, he preferred the use of two or three sets of sutures. The old continuous suture too easily permits the entrance of pus from the wound into the abdominal cavity. The advantage of using a separate suture for each layer of the abdominal wall is that the internal peritoneal wound will have healed sufficiently to prevent the entrance of pus before suppuration shall have been established.

DR. W. H. CARMALT, of New Haven, reported a case of intestinal obstruction in which he had not made a laparotomy, but had ever after regretted that he had not done so. The case was one of obstruction. The patient, when he was called, was in a condition so closely bordering on collapse that he decided that it was not proper to operate. She had been ill for about five days. She died within thirty-six hours after his refusal to operate, and the autopsy revealed the error of his opinion. The obstruction was found to have been due to a binding down of the intestine at a point deep in the pelvis, but it was probable that an operation would have relieved the difficulty. The autopsy demonstrated, however, that no small opening into the abdomen, large enough only to admit two fingers would have been of any benefit for diagnostitial purposes, for the adhesion was so low down that it was not a matter of ease to reach it with the hand in the abdomen.

DR. MEARS stated that, owing to a misunderstanding of a part of his remarks, he desired to reiterate what he had said, viz., that he made a distinction between a laparotomy for the purpose of diagnosis and a laparotomy as a means of treatment. With reference to the latter operation, he fully agreed with the Fellows of the Association, that it is a highly proper procedure under circumstances which demand it. But as to lapa-

rotomy as a diagnostic operation, he would resort to it only when all other means have failed. When it is performed, the surgeon should be prepared to make at once any subsequent step that may be demanded.

DR. JOHNSON, in closing the discussion, stated that he had intentionally confined his communication to the subject of laparotomy as a means of diagnosis, without reference to the purposes for which the operation is to be employed and without reference to the methods of diagnosis which should precede it. As a rule, when these patients present themselves for operation they are in such a condition that they cannot live without it, and if the operation prove successful, it is a clear gain, without the possibility of a loss. With reference to the suture that is used, he thought it was a matter of choice. Some surgeons prefer one kind of suture, others another, but the result is about the same from all.

With reference to the length of the incision, he believed that it is more serious when carried above the umbilicus, but surgeons cannot always be chosers. The incision should always be made in the median line.

SECOND DAY, APRIL 29.—MORNING SESSION.

The Association was called to order by THE PRESIDENT at 11 o'clock.

DR. HAROLD C. ERNST, of Jamaica Plain, Massachusetts, read a paper entitled

A CONSIDERATION OF THE BACTERIA OF SURGICAL DISEASES,

prepared in compliance with a request of the Association at its last meeting. He remarked that the older methods of investigating the suppurative processes of the body were supposed to be conclusive It was found, for example, that the introduction into the body of certain "irritant" substances was followed by the formation of pus. The chief substances which were used in these investigations were croton oil, cantharides, and like substances. Later investigations led to the belief that the formation of pus in these experiments was due not to any specific power of the substance so introduced. It has been found that pus-formation does not occur if these irritant substances are introduced without the introduction of septic matter. And it is now settled that no suppuration will occur without the introduction of microörganisms. This point being determined, the study of the microörganisms which have this power becomes of interest. Pasteur was one of the first to enter this field of investigation. Since these investigations, the term "microörganism of pus" has been used as though there was but one form of organism capable of giving rise to suppuration of whatever kind. Later experiments have, however, shown that there are many organisms thus endowed. One of the most thorough students of these varieties is Robert Koch. At least twelve varieties have been described up to the present time. All have not, however, been subjected to a definite staining process as has that of the bacillus tuberculosis. The properties of the microörganisms which give them the right to be classified into at least twelve varieties, are:

1. Morphology—form, size, color, and arrangement.
2. The power of motion, or its absence.
3. Behavior upon the culture material, including the form and color of the colony that is produced.
4. The temperature at which they flourish.
5. The rapidity of their development.
6. Whether or not they produce spores.
7. Whether or not the presence of air is necessary to their development.
8. Whether they produce gas.
9. Whether they liquefy the culture material.
10. Their behavior under the action of staining materials.
11. Their pathogenic powers when inoculated into the lower animals.

These tests had, when applied to the pyogenic microorganisms that have up to the present time been discovered, divided them, according to the best bacteriologists, into the following twelve classes:

1. *Staphylococcus pyogenes aureus.* This form, he said, is very abundant in pus. Its morphology, color, behavior in culture, reaction to coloring matters, etc., were all described, and a culture specimen of an advanced generation presented for inspection. Under cultivation it produces an orange color.

2. *Staphylococcus pyogenes citreus*, also found in pus, having all the properties of the preceding staphylococcus, with the exception of the color of its colony, which is a lemon-yellow.

3. *Staphylococcus pyogenes albus.* This is found in pus, also, but less frequently than either of the preceding. It is, however, similar in character and morphology, but the colony it produced has a white color.

4. *Micrococcus pyogenes tenuis.* This micrococcus is found in large, subacute abscesses. It is somewhat larger than the preceding.

5. *Staphylococcus cereus albus*, a rather large micrococcus found in pus, in masses or chains.

6. *Staphylococcus cereus flavus*, like the preceding, except that it produces a lemon-color, darker than that of the staphylococcus pyogenes citreus. It is very rare.

7. *Bacillus saprogenis* (No. 1), found in the follicles of the tonsil.

8. *Bacillus saprogenis* (No. 2) is found in the secretion of foul-smelling feet, and has its characteristic odor upon cultivation.

9. *Bacillus saprogenis* (No. 3), found in the pus of septic gangrene.

10. *Bacillus pyogenes*, found in the pus of abscesses about the anus.

11. *Streptococcus pyogenes*, found in the pus of erysipelatous-like processes.

12. *Streptococcus erysipelatis*, occurring in the lymph channels during erysipelas.

Test-tubes containing colonies of each of these varieties were exhibited, and at the close of the paper the Fellows were invited to inspect microscopically preparations of several of the forms that had been treated with double staining fluids.

Dr. Ernst narrated at some length, both as to method of procedure and as to result, a large number of inoculation experiments which he had made, as also the most approved methods of inoculating the culture material. A considerable number of diseases had been investigated by him, and culture experiments made from them. He stated that he had confined himself in his studies almost exclusively to the more chronic forms of disease. These all showed the presence of one or several varieties of microörganism, notwithstanding the

statement that is frequently reiterated, that such organisms are not found in chronic affections.

He then presented the following conclusions:

1. The cultivation experiments, continuing over so long a time, with the successful inoculations at the end of that time, indicate very plainly the continuance of the pathogenic powers of these organisms indefinitely. Their virulence is just as great at the end of the year and after being passed through a number of cultivations as when just taken from their original birthplace.

2. Their permanence of form is also well demonstrated. Their microscopic appearance and peculiarities of form under cultivation undergo absolutely no alterations.

3. In order to obtain either a modification of their pathogenic powers or of their morphological properties, if this is possible at all, some different methods of observation must be used than those which have been hitherto employed.

4. That the probabilities indicate that work in this direction is not likely to be attended with much success, (a) because no modifications have yet been observed, and (b) because prophylaxis furnishes the easiest and most generally applicable safeguard against the activity of these lower forms of life.

5. So far as experiments go, they do not show that any form of suppurative process in man is unattended by bacteria; that the inoculation into the lower animals of pure cultures of these bacteria is followed by more or less acute and extensive suppuration.

6. The conclusion of the dependence of the suppurative process upon the activity of bacteria, is very strongly supported by the most recent evidence of all of the best workers in the field of bacteriological research.

7. That very different clinical effects may be produced by the same organism, all these phenomena, however, coming under the head of inflammatory suppurative processes.

8. That the differences in the results produced by the same microörganism in different individuals depend upon causes outside of the bacterium itself.

9. That these differences are the result of differences in the amount of infectious material received in the system, and of the locality of the lesion by which it gains access, and also by variations in the individual condition—the "personal equation" being a very large factor in making up the sum of any results in bacteriological work.

DR. S. W. GROSS, in opening the discussion, remarked that the Association was deeply indebted to Dr. Ernst for his instructive and painstaking paper. The investigations which he has made confirm those which have been made by others, all of which go to show very conclusively that all acute suppurative processes are dependent upon vegetable organisms. In regard to this there can now be no doubt. The most interesting part of the paper, however, is that which relates to the chronic suppurative processes. We are all aware of the fact that up to the present time it has been denied that chronic suppurations are due to the same organisms which excite the acute suppurations. We will, therefore, have to credit Dr. Ernst with having made this discovery. It was not for him, the speaker thought, to comment further upon the paper, as he had given his time to practical surgery and had never made a study of bacteriology.

DR. J. S. BILLINGS remarked that some of the difficulties which come up in considering this subject, relating to the problem of cause and effect, are, first, there seems to be no definite relation between the number of organisms that is present and the effect that is produced; second, we are by no means assured of the specific difference between the various forms of microörganisms. Although they retain the same forms and produce the same results after a long list of cultures, it is a fact that a very slight difference in the chemical nature of the culture substance will produce a very marked difference in the organisms that flourish upon it. All forms of organisms will not flourish on the same soil. One organism, for example, will flourish only in the presence of an exceedingly small amount of zinc; another requires a small amount of tannic acid. There is one form which is found only on old beets, another which occurs only on the seventeen-year locust. Thus some forms are localized strictly to one form of media, and that a very rare form. He had investigated probably a thousand varieties of organisms from various sources, and had been impressed with the distinctness of a great many varieties in reference to the soil selected by them.

Microörganisms are further very markedly influenced by changes in the temperature of surrounding media. All these minute peculiarities must be considered, and the probability is that they constitute what Dr. Ernst speaks of as the "personal equation." We must have, along with the culture and inoculation methods, a chemistry of which we have as yet only the rudiments.

He referred briefly to the reported discovery by Gautier of leucomaines, as distinguished from the ptomaines. The only theory which we have at present to account for the evil consequences of the lower organisms in the body, is that much of their action depends not on the presence or action of the microörganisms, but on the impression made upon the nervous system, high up in the centres, either in the medulla or above it, by some production of the microörganism. We must have a chemistry developed, by the methods of which we shall be able to distinguish these alkaloidal (if that is the proper term to employ) forms, and thus to explain some of the effects produced by them.

It is believed, among other things, that the effect which is produced by microörganisms differs with the number of different varieties present in the body at one time, as well as by the order in which one organism follows another in its invasion of the body.

The speaker expressed preference for the use of the methods employed by Dr. Sternberg in inoculation experiments over those employed by Koch, since in the former a separate sterilized tube is used in the transfer of matter from the seat of disease to the culture substance, thus evading one source of contamination with extraneous matter.

In order to complete the chain of evidence that a particular microörganism is the cause of a definite disease, it is required that the organism be carried through a series of culture experiments to such a degree as will no longer leave it a matter of doubt that we have present only the microörganism without any of the extraneous matter or pus from the original wound. Unfortunately we are compelled to work almost exclusively with the microörganisms which produce the same disease in man and the lower animals. If the inoculation fails in the

lower animal, the experiment is at an end. This is the great difficulty in the investigation of yellow fever—we cannot find an animal subject to the disease. Further, all the experiments have been made upon a limited variety of animals, although it is probable that some of them must yet be repeated on other animals, as monkeys, which will make it an expensive piece of work.

DR. SENN expressed full accord with the conclusions drawn by Dr. Ernst. He desired further only to refer to a few of the conditions found within the body which predispose to infection, or that may serve, in other words, as culture media for these germs. First, we have in cases of infection a development of germs at the point of infection, or at a distant point in direct anatomical connection with the point of infection. Further, independent of visible or tangible infection, we must conclude that infection takes place from within—that is, the germ is introduced into the circulation and at some point becomes localized. It is an important topic for the surgeon to consider how he may prevent the entrance of germs, or, after their entrance, to preserve such conditions as will prevent their development. The first condition which predisposes to the development of microörganisms within the body is a derangement of the capillary circulation. We all know that osteomyelitis generally affects young individuals, the microorganisms invading the long bones, near the osteal cartilages. It is because we have to deal in this locality with a large number of minute bloodvessels, with imperfectly formed walls and imperfectly developed bone, all of which especially favor the changes that are produced. The same organism also attacks the medulla of the bone, because, as has been demonstrated, the medulla is simply an excavation, exceedingly rich in minute bloodvessels with delicate walls. Germs passing along perfect bloodvessel walls become arrested at some point which favors local congestion and engorgement.

The second condition favoring the development of germs is a traumatism. A traumatism produces a medium for the germs to grow upon, just like that of an artificial culture substance. In this way localization is determined.

Another condition favoring the development of microorganisms is the presence of antecedent pathological products. The germ of tuberculosis has no tendency to produce suppuration, and when suppuration occurs in a tubercular focus we know certainly that it is due to the presence of another variety of organism which has become engrafted upon a tubercular basis.

As surgeons, we must endeavor to prevent suppuration, first by endeavoring to prevent inoculation; and second, by guarding against circumstances favorable to the development of the microörganisms.

Reference was made to the experiments of the speaker on the pancreas, to be reported in the afternoon. The most favorable circumstances for the occurrence of suppuration he had been able to find were cases in which he had left portions of the devitalized pancreas in the abdominal cavity. While it is not to be doubted that germs are present in every instance of suppuration, it is as certain also that the leaving of a portion of devitalized pancreas in the cavity provides a suitable soil for the development of these germs.

Dr. Ernst has stated that in the culture experiments the microörganisms possess the same vitality after a succession of cultures as when taken from their original soil. This fact is illustrated also in certain diseases, as in osteomyelitis, where we have sometimes a redevelopment of the disease after as long as twenty or thirty years of quiescence. During this period of health the organisms lie dormant in the body until some favorable influence calls them into activity.

DR. ERNST closed the discussion by thanking the Association for the interest manifested in his investigations. He further defended his use of Koch's inoculation syringe, on account of the ease with which it is cleaned and rendered aseptic, as well as its convenience for measuring the quantities of fluid used.

A vote of thanks was extended to Dr. Ernst for his able and interesting paper.

DR. DAVID PRINCE, of Jacksonville, Ill., read a paper on

A PLAN FOR ATMOSPHERIC PURIFICATION FOR SURGICAL AND FOR HYGIENIC PURPOSES.

This was an improvement on that presented by the same author one year ago. A criticism has been made to the effect that no matter how perfectly the floating elements might be removed, yet the air of the room would become contaminated by emanations from the patient, the surgeon, his assistants, and the spectators, at the time of the operation. That criticism is met in the present plan by an arrangement for blowing upon the portion of the body to be the seat of operation a column of air which has undergone a special washing by means of a spray, and which must carry away from the wound any floating materials which may have been set free from the bodies of the people in the room. The water used for washing the air should be a solution of mercuric bichloride.

A CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

DR. C. H. MASTIN, of Mobile, at the executive session of the first day, presented a memorial setting forth that in view of the fact that there are a number of special medical organizations now in existence in the United States, each having for its aim and attainment the advancement of the special department of medicine for which it was organized; and since the members of said special societies are of the representative men of the profession in America, many of whom are, at the same time, fellows or members of several of these special societies, which double membership, if it may be so expressed, necessitates them—if desirous of attending two or more of the meetings of these societies the same year—to make as many separate trips from home, and often with much loss of time to themselves and inconvenience to their patients. Therefore, it appears necessary that some arrangement should be made with the different societies as to a uniform time and place of holding their sessions, so that those members who wish to attend the meetings of more than one association may be enabled to do so without useless expenditure of money, or unnecessary loss of time.

An extended correspondence, together with personal conference with many of the most prominent of the fellows of this and other associations, has disclosed the fact that there is a decided and growing inclination to unite the various societies into a common whole, whereby it

would become a general organization, representative of the various special departments of the profession in America.

The plan proposed, and which is offered for the consideration—and, it is hoped, approval—of the Fellows of the Surgical Association, is to unite the following named associations into a Congress based upon the outlines which are now to be explained: 1. American Surgical Association; 2. American Ophthalmological Association; 3. American Otological Association; 4. American Neurological Association; 5. American Laryngological Association; 6. American Gynecological Association; 7. American Dermatological Association; 8. American Climatological Association; 9. American Clinical and Pathological Association. These Associations to be united under the name and style of "*The Congress of American Physicians and Surgeons.*"

The plan of organization hereby submitted, and subject to any alterations or amendments which may be deemed wise and proper, is that each society will preserve its own name, constitution, and by-laws; elect its own officers and fellows; hold its own sessions apart from the others at the time and place of meeting; publish its own transactions; and do all other acts of which, by virtue of its constitution and by-laws, it has the inherent right to do, thus preserving its own autonomy.

The Congress to be composed of these special societies when in convention, and its meetings to be held annually in the city of Washington—the most appropriate place for the assembling of such an organization. The constitution and by-laws of the Congress to be formed by a committee composed of a like number chosen from each separate society. The opening session of each annual meeting of the Congress to be devoted to such general business as may pertain to the interest of the associations as a whole. The Congress to be presided over by a president, elected annually, and who shall deliver the opening address upon the first day of the session. The manner of choosing the president to be as follows: by a nominating committee composed of one member elected from each special association, or otherwise, as may be determined upon by the special society itself; this committee nominating one or more candidates for the office of president, whose election is to be by ballot on the last day of the annual session, and in a convention of all the societies assembled. The presidents of the special societies to become, *ex-officio*, vice-presidents of the Congress. Membership in the Congress to be acquired only by virtue of fellowship in one or another of the special associations. Other officers of the Congress to be elected or appointed as may hereafter be determined upon by the associations in convention.

These are the outlines of a union proposed for the consideration of the Fellows of this Association, which, if it should meet their approval, can be submitted to the action of the societies which have been mentioned. It was suggested that the Chair appoint a Committee of five to bring the subject before the next special association which meets this spring or coming summer, and which, in the event of a concurrence of opinion on the part of said society, shall act in concord with their committee appointed to confer with the other societies, in the order of their meetings. This enlarged committee to report at a convention of all the societies, which shall be requested to hold their next annual meetings at the same dates in the month of June, 1888, in the city of Washington.

To avoid any confusion as to the time of next meeting, each society (this year) could adjourn to meet in June, 1888, leaving the date to be fixed by the enlarged committee after their work of conference had been finished, it then being only necessary to apprise the secretaries of the respective associations, who will give notice to the various fellows or members.

This proposition is the result of calm consideration, and has been approvingly endorsed by quite a number of the representative gentlemen of the profession, both in and out of this special Association.

Dr. Mastin disclaimed any intention of offering any obstacle or opposition to any other association in America. The plan proposed is simply to unite into one great body the already existing special societies, and it is proposed from the honest conviction that such a union will prove of inestimable benefit to them, individually and collectively.

This proposition was referred to a Special Committee, consisting of Drs. J. Ewing Mears, Christopher Johnston, and W. T. Briggs.

The above Special Committee reported that it viewed with great satisfaction the perfection of a plan through which the meeting of the Associations above named in the city of Washington at the same time of the year, may be accomplished, and the meeting of all the associations in general assembly on such days as may be determined, for the purpose of delivery of addresses upon general subjects in medicine, such meetings to be held without any formal organization through which the associations meeting will sacrifice their autonomy.

To accomplish these purposes the Committee offered the following resolution:

Resolved, That a committee of five Fellows of this Association be appointed, which shall be authorized to confer with committees of other associations interested in the adoption of a plan of a convention as hereinbefore stated, and report upon the same at the next meeting for the action of the Association.

The resolution was adopted, and the following committee was appointed in accordance therewith: Drs. C. H. Mastin, of Mobile, Chairman; C. T. Parkes, of Chicago; J. Ford Thompson, of Washington; N. Senn, of Milwaukee; and J. Ewing Mears, of Philadelphia, Secretary.

AFTERNOON SESSION.

CHOLECYSTOTOMY.

DR. C. T. PARKES remarked that as he had presented, one year ago, several cases of successful cholecystotomy, he desired to-day to report two cases which had a fatal ending. They demonstrated the fact that obstruction of the gall-duct is not always amenable to surgical treatment. They also illustrate the difficulties the surgeon has to deal with when the bladder is atrophied or when it is not in a state of distention.

Case I. was that of Mrs. W., who applied to him for relief from gallstones, from which she had suffered for six years. The patient was of a robust constitution, but had an icteric hue, and her stools were usually of a clayey color. Some months after he first saw the patient, she had a severe attack of pain coming on after

a horseback ride, and lasting for several hours, without his being able to afford relief by the administration of morphia. Finally the stones were passed, as was proved by their discovery in the stools, and the trouble was again at an end.

After consulting many physicians, at home and abroad, she finally consented to have an operation performed. An incision of considerable length was made, but no gall-bladder was seen through the opening, and the intestines were with difficulty kept out of the incision. Finally the gall-bladder was discovered closely adherent to the under surface of the liver, much lengthened and considerably thickened. Several stones could be recognized in the lower portion of the bladder. The common duct could be felt, thickened, twisted and rolled like a hard cord. The largest stone was felt tightly compressed by the duct-walls. The bladder could not be brought into the external opening, but was at last loosened from its attachment to the liver, and was then brought to view. Silk sutures were passed through the fundus of the bladder on either side of the median line, then through the margins of the abdominal incision and the whole firmly secured. The tissue intervening between the sutures was then divided. The wall was fully half an inch in thickness. The stones were now without difficulty recognized through the opening, and forty-three were removed. The opening in the gall-bladder was first closed, then that in the abdominal wall, the abdominal cavity having been thoroughly cleansed. As having an important bearing on the final termination of the case, he added that the anæsthetic acted badly from the first, producing vomiting immediately after its first administration. The pulse was 130 when the patient was put to bed after the operation, and she never rallied. At the end of thirty hours the first dressing had to be removed from the wound on account of its becoming saturated with extravasated bile.

Case II. he had seen in association with Dr. Gunn, who had permitted him to report the case in connection with the one just narrated. The patient was a man twenty-five years of age. He suffered from attacks of severe pain in the hepatic region every week or two. He was emaciated to an extreme degree. Although the stools have been repeatedly examined, gall-stones have never been discovered. An incision four inches in length was made over the region of the gall-bladder. The liver was at once exposed, but the bladder was not discovered. But close to the locality in which it should have rested was discovered a firm, hard cyst. It was too near the large bloodvessel to admit of any surgical interference. It appeared to press so firmly on the gall-duct as to prevent the passage of bile through it. The patient died twenty-four hours after the operation. Autopsy revealed the gall-bladder much atrophied and empty. A stone was found completely obstructing the passage through the duct. A small abscess was also found immediately by the side of the duct, accounting for the cyst that had been felt.

DR. W. H. CARMALT reported a case which had come under his observation and which resembled to a considerable extent that just narrated. A woman, thirty-seven years of age, apparently healthy and robust, consulted him on account of the following history. She had suffered for several years from an ill-defined dragging sensation in the right hypochondriac region. The woman had borne several children. On examination, a tumor was discovered, and a scar over the region in which she felt the peculiar sensation. This she accounted for by the statement that in March, 1883, she had applied for treatment at the clinic of von Bergmann, of Berlin. She was operated upon and told that her right kidney had been stitched to the side. While yet in the hospital, she added, she was attacked with a fit of sneezing, and that immediately after that the symptoms of dragging returned. She was told that the kidney had broken loose. She remained in Germany for some time afterward, then joined her husband in this country, in the early part of 1885. When she came under observation the dragging had become almost unbearable. She had been told in Germany that she could have her kidney removed, and she came to him as a result of that advice. He found her a fairly strong, hard-working woman; but she had the most remarkably pendulous abdomen he had ever seen—she always wore a supporter. The tumor was visible on inspection, and it almost entirely hindered her from work.

I was freely movable and changed its position spontaneously as she assumed the lying or standing posture. It could also be pushed about in the abdomen with slight manipulation, and could be readily palpated. She had never had any symptoms of gastric irritation. There was no history of dyspepsia, gall-stones, or other disturbance of the biliary functions. Her urine was examined daily for a month without the discovery of anything abnormal.

The patient having been fully anæsthetized, he made an incision four inches in length over the tumor, immediately external to the rectus muscle. When the abdominal cavity was opened, he found himself face to face with a tumor which clearly was not a kidney. It was of a light pink color, fluctuating, and situated just below the border of the liver. The intestines protruded through the incision, but were without much difficulty retained. Upon examination the tumor proved to be a dilated gall-bladder. Four ounces of inspissated mucus were withdrawn by the aspirator: the cyst then flattened down and stones were discovered in it. After suturing the bladder and opening it, as described by Dr. Parkes, he found a stone as large as the end of his thumb. Four others were discovered after this one had been removed, two of which were so tightly lodged that they were crushed in extraction. After thorough cleansing of the bladder, the incision was closed with catgut, the Lembert suture being used. Every precaution had been made previous to the operation to make the room and instruments aseptic. After closure, the wound was dressed with borated cotton. The wound united by first intention except at one point, where an iron-dyed suture was used, and the woman recovered without an elevation of temperature above 101.2°. She is now in perfect health and able to attend to her household duties. The right kidney was found in its normal position.

DR. PARKES remarked that this case confirmed what he had just said with regard to the difficulties encountered in case the gall-bladder is not distended.

DR. N. SENN, of Milwaukee, then read a study of

THE SURGERY OF THE PANCREAS, AS BASED UPON EXPERIMENTS AND CLINICAL RESEARCH,

and presented the following conclusions:

1. Restoration of the continuity of the pancreatic duct does not take place after complete section of the pancreas.

2. Complete extirpation of the pancreas is invariably followed by death, produced either by the traumatism, or by gangrene of the duodenum.

3. Partial excision of the pancreas for injury or disease is a feasible and justifiable surgical procedure.

4. Complete obstruction of the pancreatic duct uncomplicated by pathological conditions of the parenchyma of the organ, never results in the formation of a cyst.

5. In simple obstruction of the pancreatic duct the pancreatic juice is removed by absorption.

6. Gradual atrophy of the pancreas from nutritive or degenerative changes of the secreting structure is not incompatible with health.

7. Physiological detachment of any portion of the pancreas is invariably followed by progressive degeneration and atrophy of the glandular tissue.

8. Extravasation of fresh, normal pancreatic juice into the peritoneal cavity does not produce peritonitis, but is promptly removed by absorption.

9. Crushed or lacerated pancreatic tissue is removed by absorption, provided the site of operation remains aseptic.

10. Complete division of the pancreas by elastic constriction is never followed by restoration of interrupted anatomical continuities.

11. Limited detachment of the mesentery from the duodenum, required in operations upon the pancreas, is not followed by gangrene of the bowel.

12. In all operations upon the head of the pancreas the physiological attachment of the peripheral portion of the gland should be maintained by preserving the integrity of the main pancreatic duct.

13. Partial excision of the splenic portion of the pancreas is indicated in cases of circumscribed abscess and malignant tumors, in all cases where the pathological product can be removed completely without danger of compromising pancreatic digestion or inflicting additional injury upon important adjacent organs.

14. Ligation of the pancreas at the point or points of section should precede extirpation as a prophylactic measure against troublesome hemorrhage and extravasation of pancreatic juice into the peritoneal cavity.

15. The formation of an external pancreatic fistula by abdominal section is indicated in the treatment of cysts, abscesses, gangrene, and hemorrhage of the pancreas due to local causes.

16. Abdominal section and lumbar drainage is indicated in cases of abscess or gangrene of the pancreas where it is found impossible to establish an anterior abdominal fistula.

17. Thorough drainage is indicated in cases of abscess and gangrene of the pancreas with diffused burrowing of pus in the retroperitoneal space.

18. Removal of an impacted pancreatic calculus in the duodenal extremity of the duct of Wirsung by taxis or incision and extraction, should be practised in all cases where the common bile duct is compressed or obstructed by the calculus, and death is threatened by cholæmia.

19. In such cases the principal source of danger, extravasation of bile into the peritoneal cavity, should be avoided by preliminary aspiration of the dilated bile duct, accurate closure of the visceral wound with fine silk sutures and absolute physiological rest of the organs of digestion during the time required in the healing of the visceral wound.

The paper will appear in full in *The American Journal of the Medical Sciences.*

During Executive Session the following were elected

HONORARY FELLOWS:

Sir William McCormac, Surgeon to St. Thomas's Hospital, London, England; Prof. Henry J. Bigelow, of Boston.

The following were also elected

FELLOWS:

H. H. Mudd, M.D., Professor of Surgical Anatomy and Clinical Surgery, St. Louis Medical College; Joseph Ransohoff, M.D., Professor of Descriptive Anatomy and Clinical Surgery, Medical College of Ohio, Cincinnati.

OFFICERS FOR THE ENSUING YEAR:

President.—Hunter McGuire, M.D., of Richmond.

Vice-Presidents.—T. F. Prewitt, M.D., of St. Louis, and J. W. S. Gouley, M.D., of New York.

Secretary.—Jacob R. Weist, M.D., of Richmond, Ind.

Treasurer.—P. S. Conner, M.D., of Cincinnati.

Recorder.—J. Ewing Mears, M.D., of Philadelphia.

Council.—Drs. Moses Gunn, of Chicago; R. A. Kinloch, of Charleston; Hunter McGuire, of Richmond; John S. Billings, of Washington, D. C.; and L. McLane Tiffany, of Baltimore.

Place and Time of Next Meeting.—Washington, D. C., second Wednesday in May, 1887.

Adjourned.

(*To be concluded.*)

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

Eighty-eighth Annual Meeting, held at Baltimore, April 27, 28, 29, and 30, 1886.

(Specially reported for THE MEDICAL NEWS.)

WEDNESDAY, APRIL 28.—SECOND DAY.

DR. E. G. WATERS offered the following resolution concerning

UNLICENSED PRACTITIONERS:

Resolved, That a committee of three, consisting of the present President as Chairman and two others whom he may select, be appointed to take into consideration all the legal questions growing out of the President's Address in relation to unlicensed practitioners in Maryland, with power to act in all matters which may be necessary to bring said question to a legal adjudication, provided said committee, before action, report to the Medical and Chirurgical Faculty at a meeting called for the purpose. Adopted by a vote of 26 to 16.

The committee was then appointed under the resolution, as follows: Drs. E. G. Waters, John R. Quinan, and B. B. Brown.

THE ANNUAL ORATION

was then delivered by COL. GEORGE E. WARING, JR., of New York, who chose for his subject, *The Removal and Destruction of Organic Wastes.*

In his recent address as President of the Sanitary Institute of Great Britain, Dr. de Chaumont, of Netley Hospital, gave a startling array of statistics, showing the degree to which fevers had lost frequency and fatality under the better sanitary arrangements prevailing throughout the British army and throughout the community.

Now this improvement means emphatically improved drainage and excreta removal; but the fact that we still lose some five or six thousand lives per annum in England and Wales alone, shows how much still remains to be done.

In the army we formerly suffered much from fever, even at home; forty years ago the deaths were 2.4 per 1000, and they formed 14 per cent. of the total deaths. In 1860 the number fell to about one-fourth—only 0.64 against 2.04, and 6.4 per cent. of the total deaths against 14. In 1883 the number had still further fallen to 0.25 per 1000 (0.24 enteric), and the ratio to total deaths 4.1 per cent; or, taking enteric alone, 3.9 per cent. This compares favorably with the civil returns of males of the same age, among whom the ratio is 0.301 per 1000, or 25 per cent. higher than the army ratio.

The proportion of fever deaths (enteric) to total deaths is always the same, viz., 4.12. Now this gratifying improvement can be distinctly traced to two main things, viz., improved drainage and improved water supply. With these, enteric fever soon disappears.

Dr. Billings, in his census reports, makes the estimate, and he considers it a very moderate one, that the number of unnecessary deaths in the United States—that is, the deaths due to strictly preventable diseases—aggregate over 100,000 per annum.

The preventive measures by which these diseases may be controlled are largely, of course, in the hands of the municipal authorities, who have control of the sanitary regulations of towns and cities; but there is much that is beyond their ken which comes more directly under the eye, and under the control of the physician, who is not only the natural sanitary adviser of the individual and of the family, but who also, in his corporate capacity, is the great instructor and hand strengthener of municipal health authorities.

The problem of removing and of putting beyond the power to do harm—that of destroying organic wastes—is a large one, and one which has been taken up almost *de novo* during the active life of men who are still active in the work.

The main problem, therefore, is the simpler one of bringing our waste matters as rapidly and inoffensively as possible, into such a condition and with such surroundings that they may become subject to putrefaction, and similar processes of decomposition. Organic wastes deeply embedded in compact wet clay, are preserved indefinitely, but the moment we admit air, that moment their dissolution is begun, and the stability of their organic character is doomed. The more enlightened sanitarians of the world are in accord in believing that the only sure and safe way out of our difficulty lies in the complete removal of all organic waste away from the neighborhood of habitations, and its disposal under such circumstances as will lead to its rapid decomposition. Its removal assures the safety of the community by which it was produced. Its destruction assures the safety of those into whose presence we may have sent it. *Speedy and complete removal, with speedy and complete decomposition*, is the formula by which all our work should be guided.

A system of house drains removes the sewage from the houses, the sewers remove it from the town, and we now are to consider only the question of ultimate destruction. The process to be adopted toward that end, where suitable facilities are available, is one of the following:

First. To deliver the whole mass into a river or body of water sufficient, not only to dilute it, but to furnish the abundant supply of oxygen needed for rapid and complete decomposition.

Second. To deliver it over the surface of land capable of absorbing it.

Third. To discharge it on the surface of very porous, gravelly, or sandy ground.

In both of the methods of soil treatment, the deposited organic matter is destroyed by bacterial action.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, April 7, 1886.

THE PRESIDENT, S. WEIR MITCHELL, M.D., IN THE CHAIR.

DR. THOMAS G. MORTON made some remarks on

LANOLIN,

and exhibited a few specimens of this preparation from the wool of sheep. Those who have used it have been much pleased with its employment in the preparation of ointments for external application. It can be readily rubbed into the skin and produces no irritation, and, therefore, would probably be valuable in massage. It is probable that substances combined with lanolin will be more readily absorbed than if prepared with other bases.

One of the remarkable properties of lanolin is that it can be readily combined with water. It takes up more than its own weight of water. Unna states that cooling ointments should contain large quantities of water. Dieterich, with a view to determine the quantity of water taken up by different salve bases, experimented with twenty-one different bases at a temperature of 15° C., taking for each experiment 100 parts of the base. His results were as follows: Cosmoline took up 4 parts of water; lard, 15; benzoinated lard, 17; and lanolin, 105.

Lanolin, as it now appears in the market, is a perfectly neutral base, and hence is not apt to decompose any medicament which may be added. Lassar experimented with it on 400 patients, and states that lanolin is readily absorbed by the skin, does not produce any irritation, and permeates the lower layers. Bachmann rubbed a ten per cent. iodide of potassium ointment, made with lanolin, into the skin for five minutes. After the lapse of half or three-quarters of an hour, iodine was detected in the urine. The elimination of the iodine by the urine continued for fourteen days after several applications of the ointment. Lanolin was used by the ancients, and is mentioned by Ovid, Heredot, Plinius, and Aristophanes.

Liebreich patented his process in the United States in January, 1883, and it is concisely stated as follows:

"He takes the suds from the washing of wool in the

mills, submits it to the action of a centrifugal machine which separates the soapy, oily suds from the dirt associated therewith, decomposes the suds by an acid, whereby the acid and the saponifying alkali unite and the saponified wool-fat is separated, combined with about 100 per cent. of water; this is then thoroughly washed with cold water, then heated so as to separate the water and the wool-fat, and again combined with a definite proportion of water, and lanolin is the result.

"Or, he treats wool with alkaline water, producing his suds in that way, and then proceeding as already outlined.

"A much quicker and less complex way of making the article is to treat the wool directly with petroleum benzine; distil off the benzine, and the wool-fat remains; combine this with a proper proportion of water, and lanolin results. In his patent specifications, Liebreich speaks of this process, but says it is objectionable because of the difficulty of getting rid of the benzine odor.

"Merino wool, clipped without the sheep being washed, contains, it is said, the enormous proportion of sixty per cent. of this fat.

"When it is considered that all wool averages about forty-five per cent. of its weight of this fat, that it has all to be removed before the wool can be manufactured into fabrics, that up to this time it has had no value, that the process for its extraction is not a very expensive one, and that lanolin is thirty per cent. water, it appears reasonable that lanolin will certainly be as cheap as lard as soon as competition in methods of extraction and in supplying have an opportunity to affect its price."

DR. KEEN remarked that he had used lanolin in several instances during the last week or ten days. One case was that of a child, eight years of age, with an enlarged gland under the jaw, the size of an English walnut. He prescribed iodine, two grains to the drachm of lanolin. He saw the child a week ago, and the swelling had almost entirely disappeared. This was a more rapid disappearance than he had ever seen from other iodine applications. This is the only case in which he had any results, although he had used it in a number of instances, and liked it very well.

NEWS ITEMS.

AMERICAN CHOLERA COMMISSION TO INDIA.—Dr. E. O. Shakespeare, of Philadelphia, who was commissioned to study the cholera epidemic in Spain and Italy, has been directed to proceed to India to study the disease in its home.

AMERICAN LARYNGOLOGICAL ASSOCIATION.—The eighth annual Congress of this Association will be held in the Hall of the College of Physicians of Philadelphia, on Thursday, Friday, and Saturday, May 27, 28, and 29, 1886. Morning sessions, 10 to 1; afternoon sessions, 3 to 5. The profession is cordially invited to attend.

CHAIR OF PHYSIOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.—Dr. E. T. Reichert, formerly Demonstrator of Physiology in the University of Pennsylvania, has been elected to the Chair of Physiology in that institution. Dr. Reichert delivered the course of lectures in this branch in the session of 1885–86, vice Professor Harrison Allen, resigned.

AMERICAN CLIMATOLOGICAL ASSOCIATION.—The third annual meeting of the American Climatological Association will be held in Philadelphia, Monday and Tuesday, May 10 and 11, at the Hall of the College of Physicians.

COMMENCEMENT OF THE MEDICAL AND DENTAL DEPARTMENTS OF THE UNIVERSITY OF PENNSYLVANIA.—At a public Commencement held Saturday, May 1, 1886, at the American Academy of Music, the degree of Doctor of Medicine was conferred by William Pepper, M.D., LL.D., Provost, upon one hundred and eighteen gentlemen; after which, an address was delivered by Joseph Leidy, M.D., LL.D., Professor of Anatomy. On the same occasion the degree of Doctor of Dental Surgery was conferred upon forty-one gentlemen.

DEATH OF PROFESSOR BOUCHARDAT.—The death of Dr. Bouchardat, for over thirty years Professor of Hygiene in the Paris Faculty, is announced.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 1, 1886.

WIEBER, F. W. F., *Assistant Surgeon.*—Detached from Revenue Steamer "Vermont," and ordered to the "Hartford."

TRACY, ELMER C., *Assistant Surgeon.*—Ordered to the "Vermont."

WAGGENER, J. R., *Passed Assistant Surgeon.*—Detached from the "Hartford," and ordered to the "Iroquois."

BRANSFORD, J. F., *Surgeon.*—Detached from the "Iroquois," to proceed home and await orders.

KITE, ISAAC W., *Assistant Surgeon.*—To duty at Naval Hospital, Brooklyn, N. Y.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT OF THE U. S. ARMY, FROM APRIL 27 TO MAY 3, 1886.

TOWN, FRANCIS L., *Major and Surgeon.*—Granted leave of absence for eight months, with permission to go beyond sea, to take effect when his services can be spared by his Department Commander.—*S. O. 101, A. G. O.*, April 30, 1886.

CORSON, JOSEPH K., *Captain and Assistant Surgeon.*—Granted ten days' extension of leave of absence granted in Order No. 79, April 15, 1886, Jefferson Barracks, Mo.—*S. O. 97, A. G. O.*, April 26, 1886.

WILSON, WM. J., *Captain and Assistant Surgeon* (Plattsburg Barracks, N. Y.).—Granted leave of absence for one month, on surgeon's certificate of disability.—*S. O. 25, Division of the Atlantic*, April 27, 1886.

BONHAM, ROBERT B., *Captain and Assistant Surgeon.*—Ordered from Department of Texas to Department of Dakota.—*S. O. 97, A. G. O.*, April 26, 1886.

WILSON, GEORGE F., *First Lieutenant and Assistant Surgeon.* Ordered for duty at Fort Shaw, Montana Territory.—*S. O. 37, Department of Dakota*, April 26, 1886.

POLHEMUS, A. S., *First Lieutenant and Assistant Surgeon.*—Relieved from duty at Pressidio of San Francisco, Cal, and ordered for duty as Post Surgeon at Fort Halleck, Nevada.—*S. O. 28, Department of California*, April 26, 1886.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course, not necessarily for publication.

All communications relating to the editorial department of the NEWS *should be addressed to No. 1004 Walnut Street, Philadelphia.*